

# MCAT Discussion



December 16, 2020



# How to use the chat box today

During the presentation, we will pause frequently for comments or questions.

Type COMMENT in the chat box to signal you have something to say.

MCAT staff will monitor the chat to make sure questions are answered.

# Welcome Javarro Russell, the new Senior Director of Admission Testing Services



# Agenda

- What did we accomplish at the March 2020 MVC meeting?
- What's happened since March?
- Where do we go from here?

What did we accomplish at the March 2020 MVC meeting?



What's happened since March?

# MCAT Validity Committee has continued to evaluate the new exam

- Differences in preparation and performance by racial/ethnic group
- Score use by medical school admissions committees
- The predictive validity of the new exam overall and by group

# Preparation and performance

- March 2020 article showing differences in the use of preparation resources and continued differences in MCAT scores by group
- **!New** access to more accurate data on examinees' use of official AAMC preparation resources, and more complete survey data on preparation strategies allowed us to better investigate examinees' preparation and challenges
- Up next: summarize differences in use of preparation resources and strategies to look for insights into preparation needs of examinees from underrepresented groups; consider developing new survey items to better assess nonacademic factors that may affect preparation and performance
- **!New for 2021:** Free full length sample test, CARS Diagnostic Tool

# Admissions decision making

- March 2020 article showing that schools that accept more applicants with mid-range MCAT scores have more diversity
- July 2020 admissions guide and **!New** slide deck to train admissions committees on the balanced use of scores in admissions
- **!New** Piloted data snapshots and insights to keep schools informed of applicants' testing plans throughout 2020
- Up next: Survey on the use and interpretation of MCAT scores in medical student selection and the resources/data schools need to aid their work – to target new resources and insights by the start of the 2022 application cycle

# Predicting medical student performance

- March 2020 article showing MCAT scores strongly predict M1 performance overall, and by group
- **!New** *2020 Fall Validity Report* showing MCAT scores strongly predict performance from entry through graduation, including likelihood of passing Step 1 and Step 2 CK on the first attempt and graduating within 4 years, overall and by group
- Up next: Manuscript on the predictive validity of MCAT scores in predicting successful completion of key milestones, overall and by group

# AAMC published its strategic plan

1

Strengthen the Medical Education Continuum for Transformed Health Care and Learning Environments

2

Extend AAMC's Leadership Role in Helping Students Progress through their Medical Professional Journey

3

Equip Medical Schools and Teaching Hospitals and Health Systems to Become More Inclusive, Equitable Organizations

4

Increase Significantly the Number of Diverse Medical School Applicants and Matriculants

5

Strengthen the Nation's Commitment to Medical Research and the Research Community

6

Enhance the Skills and Capacity of People in Academic Medicine

7

Improve Access to Health Care for All

8

Advance Knowledge through the AAMC Research and Action Institute

9

Launch AAMC as a National Leader in Health Equity and Health Justice

10

Adapt the AAMC to the Changing Needs of Academic Medicine

**Increase Significantly  
the Number of Diverse  
Medical School  
Applicants and  
Matriculants**



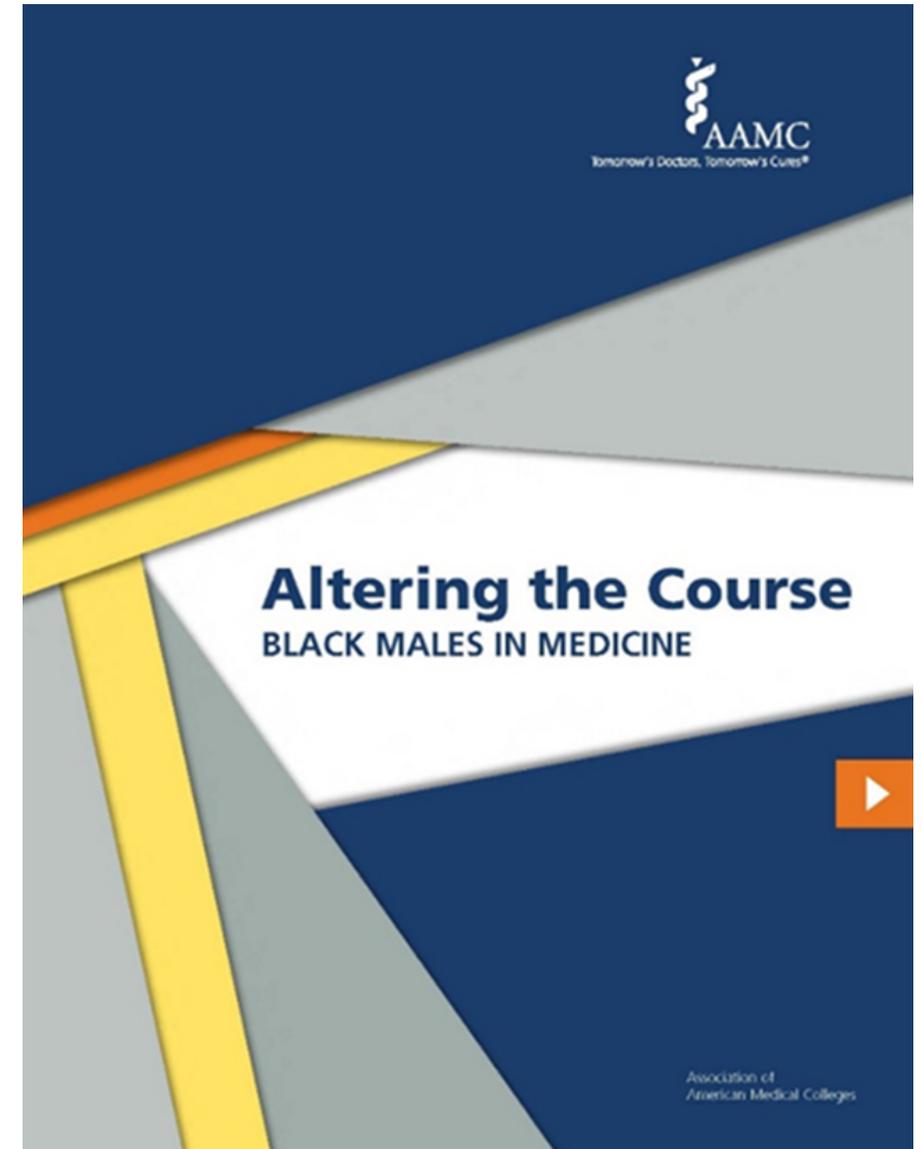
**INCREASE SIGNIFICANTLY  
THE NUMBER OF DIVERSE  
MEDICAL SCHOOL  
APPLICANTS AND  
MATRICULANTS**

- Collect, analyze, and apply AAMC and external data to support the development of system-based solutions to address inequities.
- Identify, support, and disseminate effective interventions for learners across the educational pipeline.
- Transition to Medical School and Addressing Culture and the Learning Environment.

# Action Collaborative for Black Men in Medicine

Lead by AAMC and NMA, the AC is a network of organizations and institutions that will focus on systemic solutions to increase the representation and success of Black men interested in medicine.

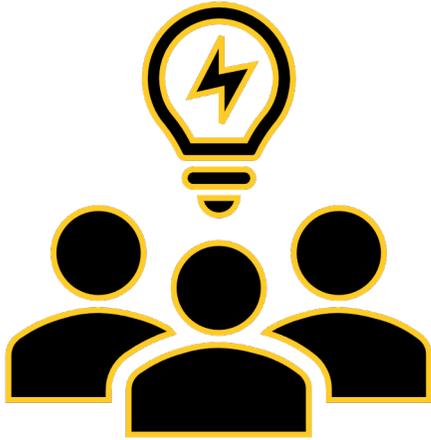
AAMC Lead: Norma Poll Hunter, PhD



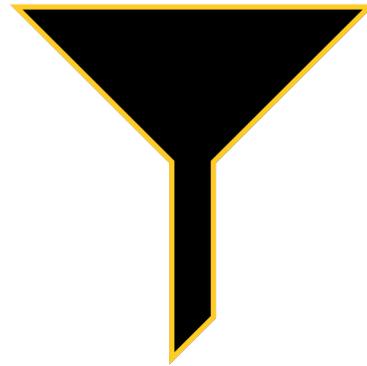
# Alignment with Other Action Plans

- AP#1 - Strengthen the medical education continuum for transformed health care and learning environments.
- AP#2 - Extend the AAMC's leadership role in helping students progress through their medical professional journey.
- AP#3 - Equip medical schools and teaching hospitals and health systems to become more inclusive, equitable organizations.
- AP#5 - Strengthen the nation's commitment to medical research and the research community.

# Current Status



Internal ideation team

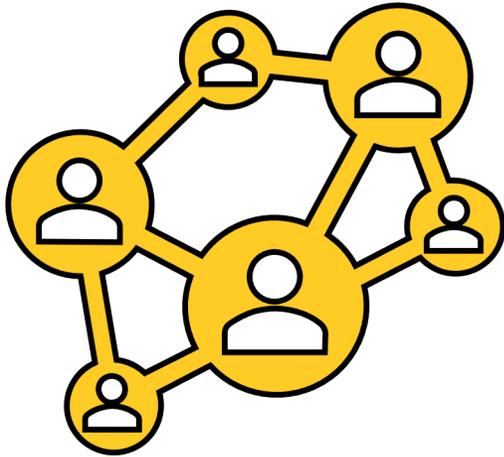


Determine scope of work and identify key milestones



Build core/work stream teams

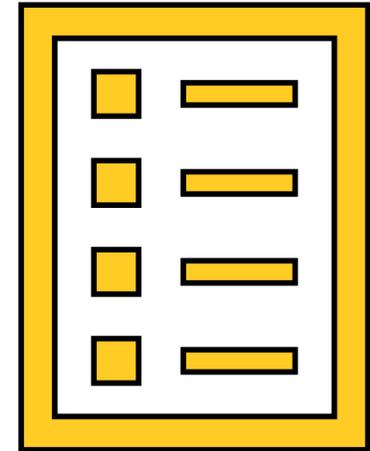
# Next Steps



Socialize idea with external stakeholders



Consult and collaborate with member institutions



Adjust scope as deemed appropriate

# Learn More

<https://strategicplan.aamc.org>



**Better health  
for everyone is  
on the horizon.**

**Read the plan**

# People have suggested test-optional and pass/fail scoring on the MCAT exam as potential antiracist policies

- Should medical schools consider applicants without MCAT scores in 2022 (or future) student selection?
- Should the MCAT be made pass/fail?



# Is the MCAT racist?

- “**Racial inequity** is when two or more racial groups are not standing on approximately equal footing...A **racist policy** is any measure that produces or sustains racial inequity between racial groups (p. 18, *How to Be an Antiracist*)”

An example...

- According to the CDC National Center for Health Statistics data report, there were statistically significant differences in the prevalence of obesity among adults by race and Hispanic origin in 2017–2018.
- Many have argued that the BMI is inherently racist and sexist.

# But is the scale itself racist?



# What does this have to do with the MCAT?

- MCAT is a tool that measures premedical preparation building blocks for medical school
- It is a tool that can be used in different ways that are racist (keeping students of color out) or anti-racist (helping students of color succeed)
- Throwing out the tool or losing the information/data from the tool does not eliminate existing inequity
- Your work can lead to enhancements in helping students prepare for medical school and helping schools use the information to help their students succeed

# The MCAT exam measures how well students are academically prepared for medical school

Biological and Biochemical Foundations of Living Systems

Chemical and Physical Foundations of Biological Systems

Psychological, Social, and Biological Foundations of Behavior

Critical Analysis and Reasoning Skills

Commentary

## Redesigning the MCAT Exam: Balancing Multiple Perspectives

Richard M. Schwartzstein, MD, Gary C. Rosenfeld, PhD, Robert Hilborn, PhD, Sandra Herndon Oyewole, PhD, and Karen Mitchell, PhD

### Abstract

The authors of this commentary discuss the recently completed review of the current Medical College Admission Test (MCAT), which has been used since 1991, and describe the blueprint for the new test that will be introduced in 2015. The design of the MCAT<sup>2015</sup> exam reflects changes in medical education, medical science, health care delivery, and the needs of the populations served by graduates of U.S. and Canadian medical schools.

The authors describe how balancing the ambitious goals for the new exam and the

varying priorities of the testing program's many stakeholders made blueprint design complex. They discuss the tensions and trade-offs that characterized the design process as well as the deliberations and data that shaped the blueprint.

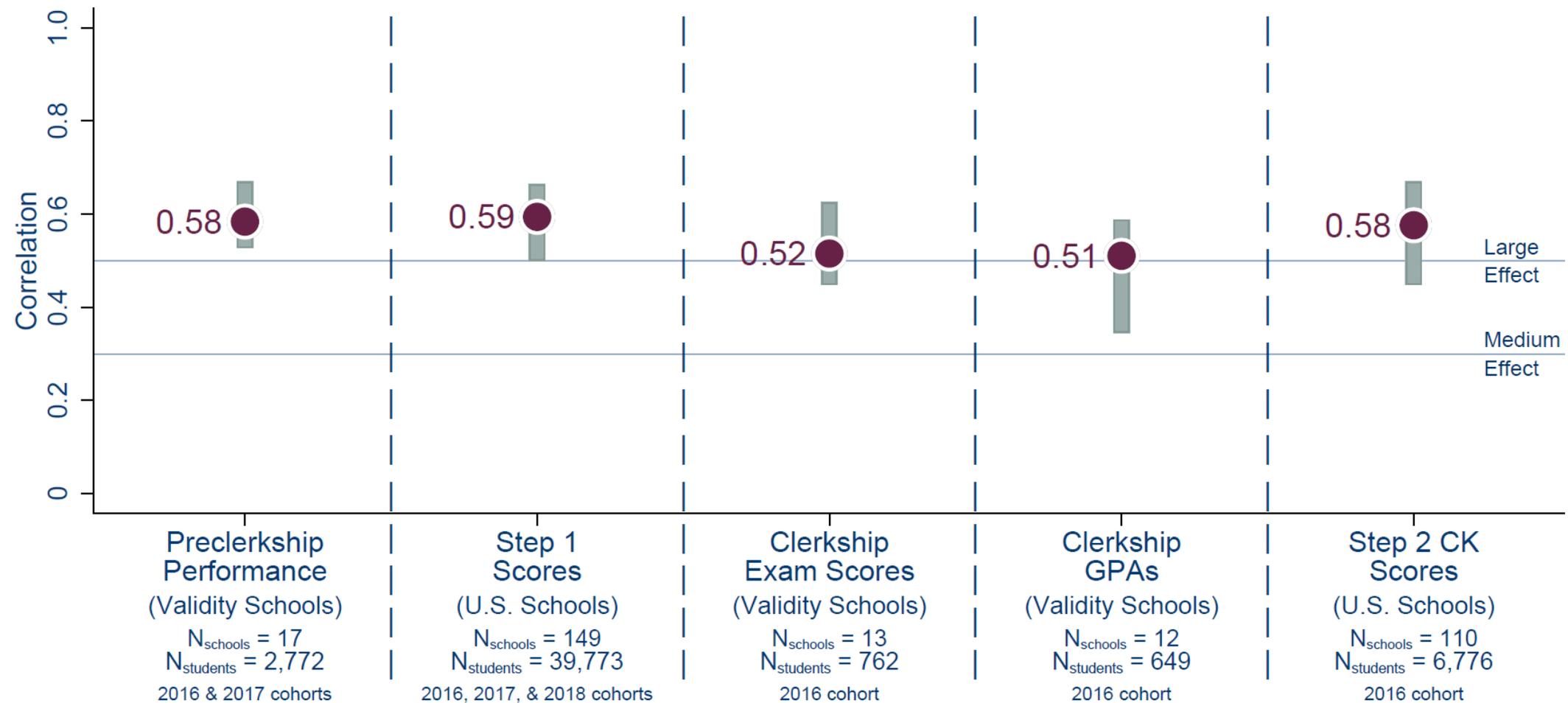
The blueprint for the MCAT<sup>2015</sup> exam balances the assessment of a broad range of competencies in the natural, social, and behavioral sciences and critical analysis and reasoning skills that are essential to entering students' success in medical school. The exam will include four sections: Biological

and Biochemical Foundations of Living Systems; Chemical and Physical Foundations of Biological Systems; Psychological, Social, and Biological Foundations of Behavior; and Critical Analysis and Reasoning Skills.

The authors also offer recommendations for admission committees, advising them to review applicants' test scores, course work, and other academic, personal, and experiential credentials as part of a holistic admission process and in relation to their institutions' educational, scientific, clinical, and service-oriented goals.

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# MCAT scores strongly predict students' performance in medical school



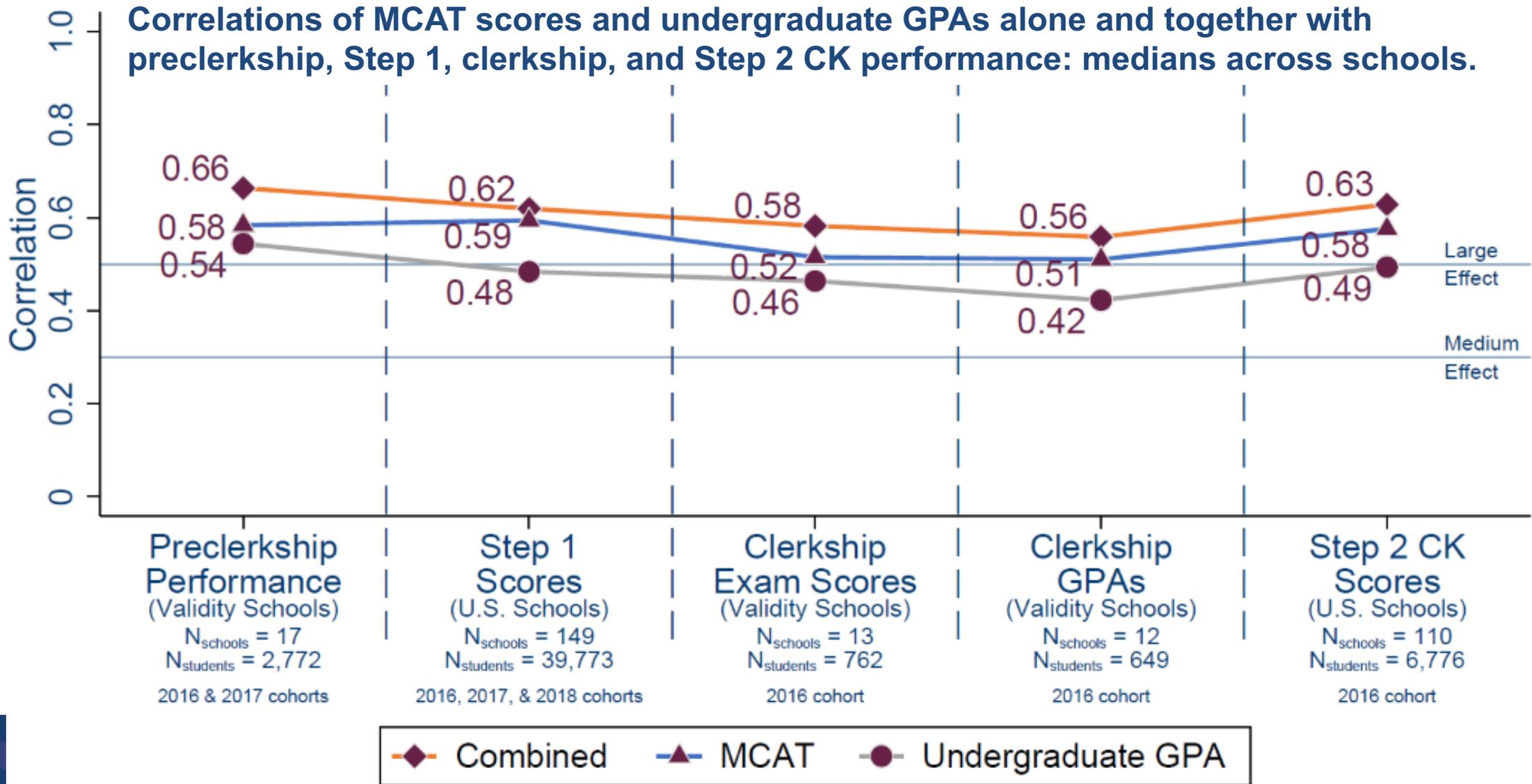
# MCAT scores provide comparable prediction for students from different sociodemographic backgrounds

So far, MCAT scores neither over- nor under-predict the performance of students from these groups on:

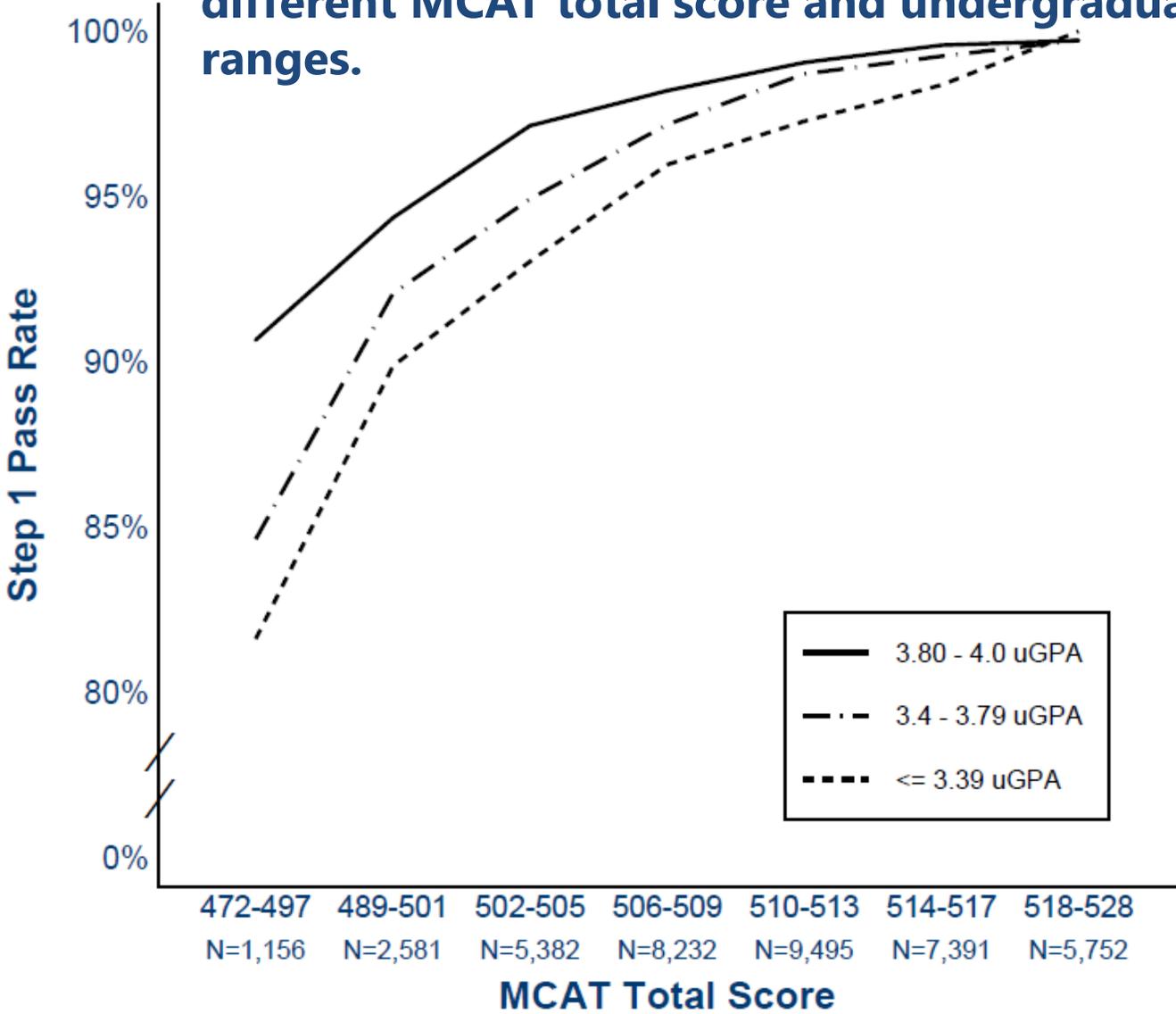
- Validity school outcomes: Performance across preclerkship courses and clerkships
- National outcomes: Step 1 and Step 2 CK scores and pass rates and progression to M3 (on time and within 1 extra year)

**We have a lot more to learn about how students do in their clerkships, on their future USMLE exams, and their graduation from undergraduate medical school.**

# MCAT total scores show stronger correlations with students' performance than undergraduate GPAs



**Median Step 1 pass rates at medical schools by different MCAT total score and undergraduate GPA ranges.**



**Together, MCAT scores and uGPAs tell more about likelihood of passing Step 1**

# But...group differences in MCAT scores are associated with educational and social inequalities

Compared with non URM examinees, those under-represented in medicine are:

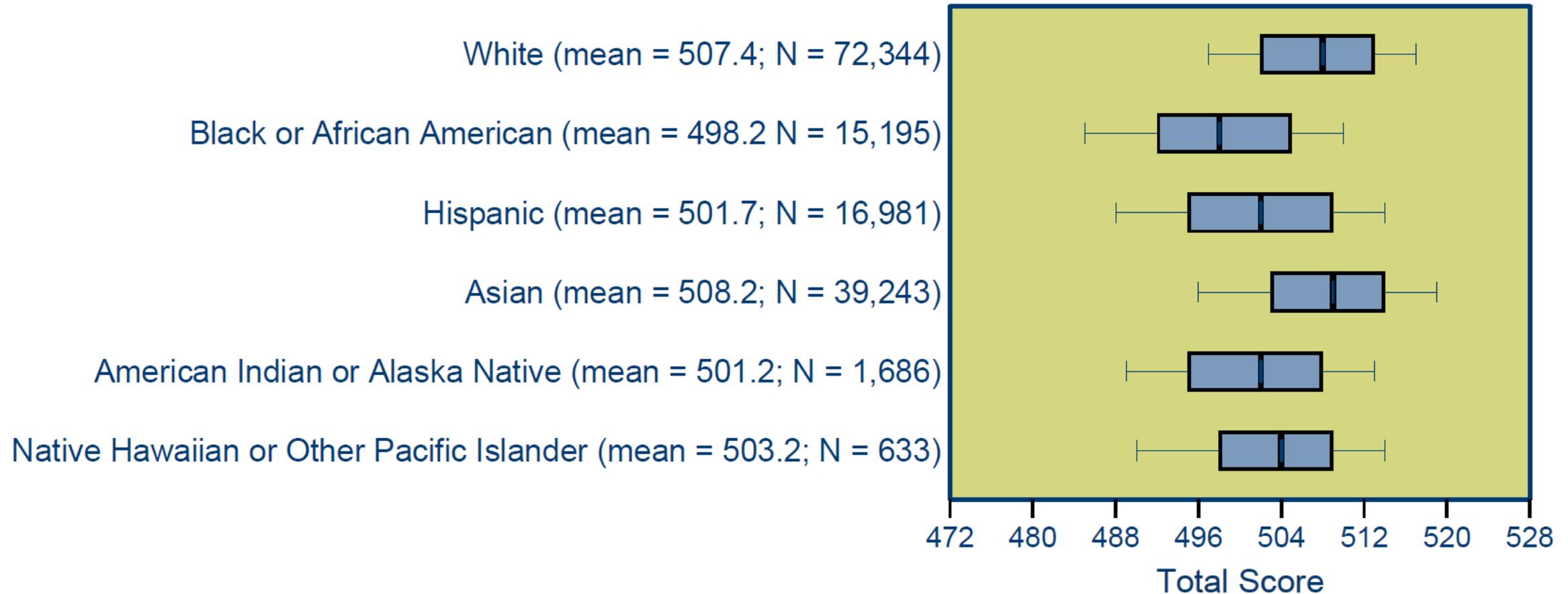
- More likely to experience adverse environmental factors (poverty, food insecurity, low-quality day care, inadequate access to healthcare)
- More likely to have had disrupted or low-quality K-12 education
- Less likely to have high-quality exam prep experiences or advising experiences in college

Undergraduate GPAs and MCAT scores (as well as LSAT, GMAT, GRE, and other standardized tests) show population group differences.

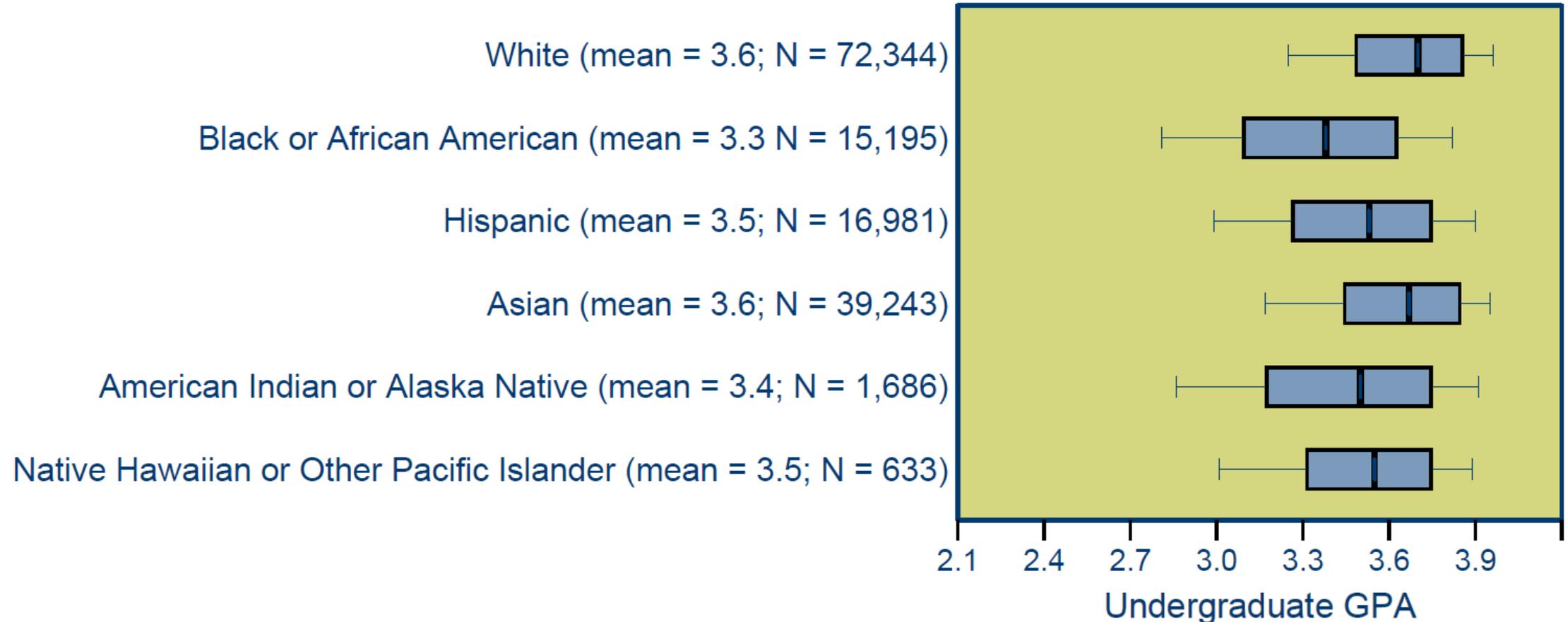
The presence of differences does not equate to test bias (i.e., construct irrelevant content or alterations in administration).

Structural racism and privilege likely contribute to the differences seen across the educational continuum.

# There are group differences in the average MCA<sup>T</sup> scores of 2018, 2019, and 2020 applicants



# The group differences in applicants' average undergraduate GPAs mirror those in MCAT scores



# Would test-optional admissions be better?

- MCAT scores are better predictors of medical student performance, providing an important signal of students who may need additional support.
- Undergraduate GPAs show the same group differences as MCAT scores, so eliminating MCAT scores will not eliminate inequity in applicants' academic metrics.
- Medical schools that have eliminated undergraduate prerequisites will have more difficulty determining academic readiness/need for support.
- Eliminating MCAT scores will give schools less information to make decisions about readiness for medical school or the need for support during school

# Without MCAT scores, schools will need to rely on undergraduate GPAs as the primary metric

- Undergraduate GPAs show the same group differences as MCAT scores, so eliminating MCAT scores will not eliminate inequity in applicants' academic metrics.
- Studies show that grade inflation continues
  - And some schools show more grade inflation than others
- And undergraduate GPAs can't be interpreted in standard ways
  - Undergraduate GPAs reflect different levels of course difficulty across institutions, different coursework across majors and students, and different grading standards across professors
- And well-prepared applicants from less familiar and under-resourced institutions might not stand out in the applicant pool

# Would making the MCAT exam Pass/Fail increase diversity?

Because on average, minority examinees have lower MCAT scores than majority examinees, many believe that pass/fail scoring would help more minority applicants get into medical school.

- In the next few slides, you will answer a few poll questions about how this option would work generally and at your school.

## Making MCAT Pass/Fail would increase the number of applicants with disadvantaged backgrounds who are accepted into medical school.



# What's the lowest MCAT score your school can admit WITHOUT academic support?



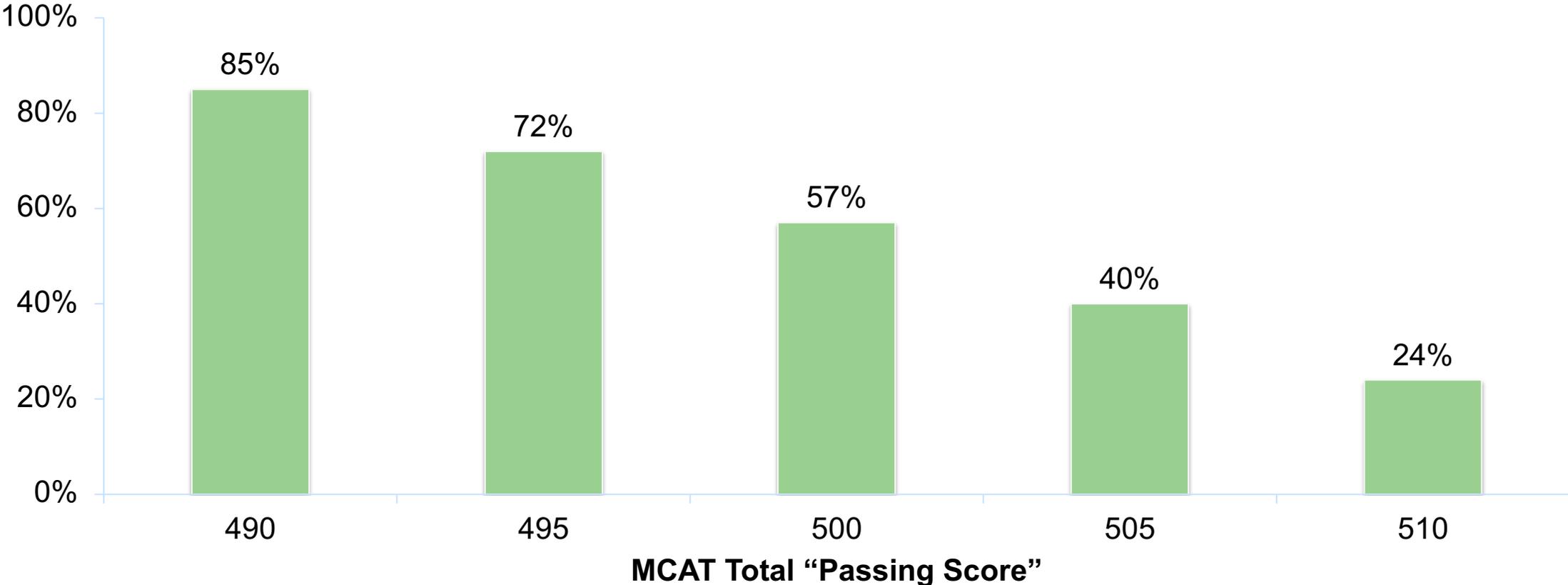
# **This analysis studies a variety of pass/fail scoring options**

Hoping to “level the playing field” for underrepresented minority applicants:

- It studies the impact of various passing scores
- The analysis assumes that applicants scoring above the cut scores would be treated as scoring equivalently and applicants scoring below would be treated as having equivalent scores

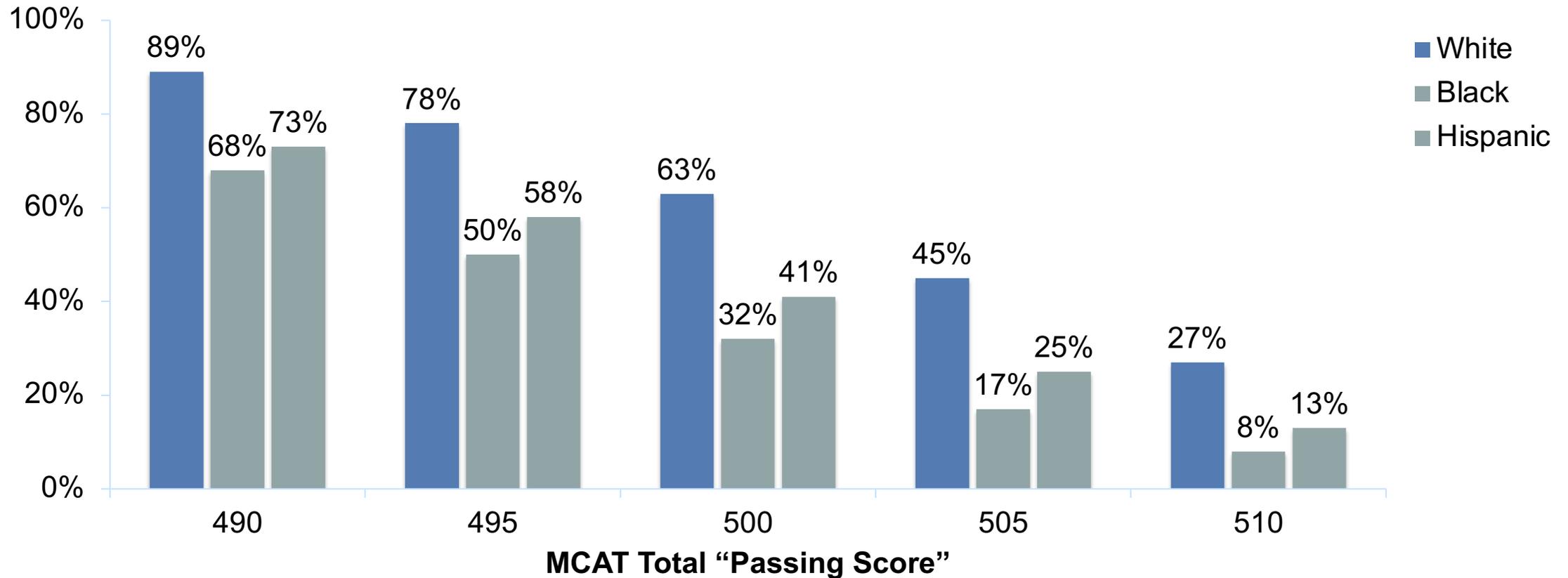
# This slide shows the percent of examinees who would pass at different hypothetical passing scores

Percent of Examinees Passing at Different Passing Scores (2018-2020)

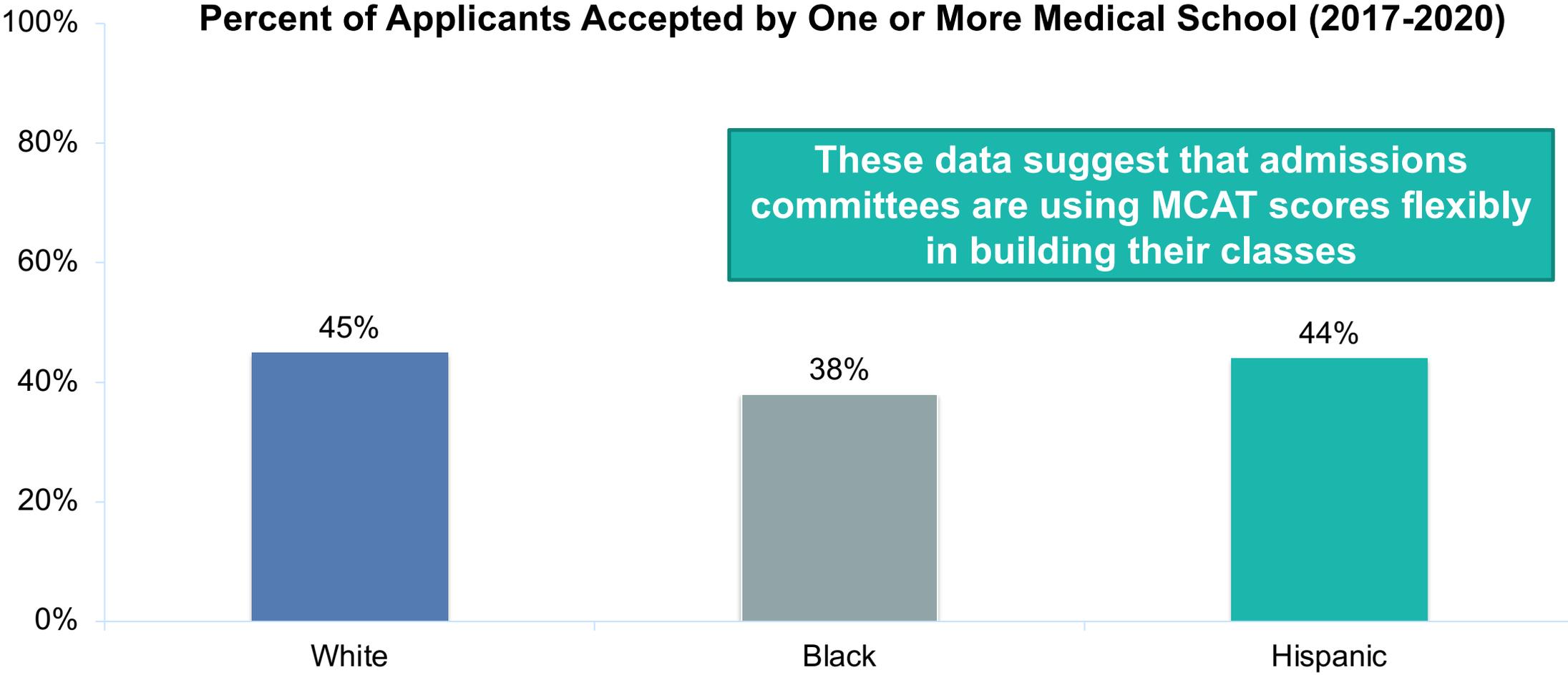


# Calculated by group, there are sizable differences by racial/ethnic group in passing rates at every hypothetical passing score below

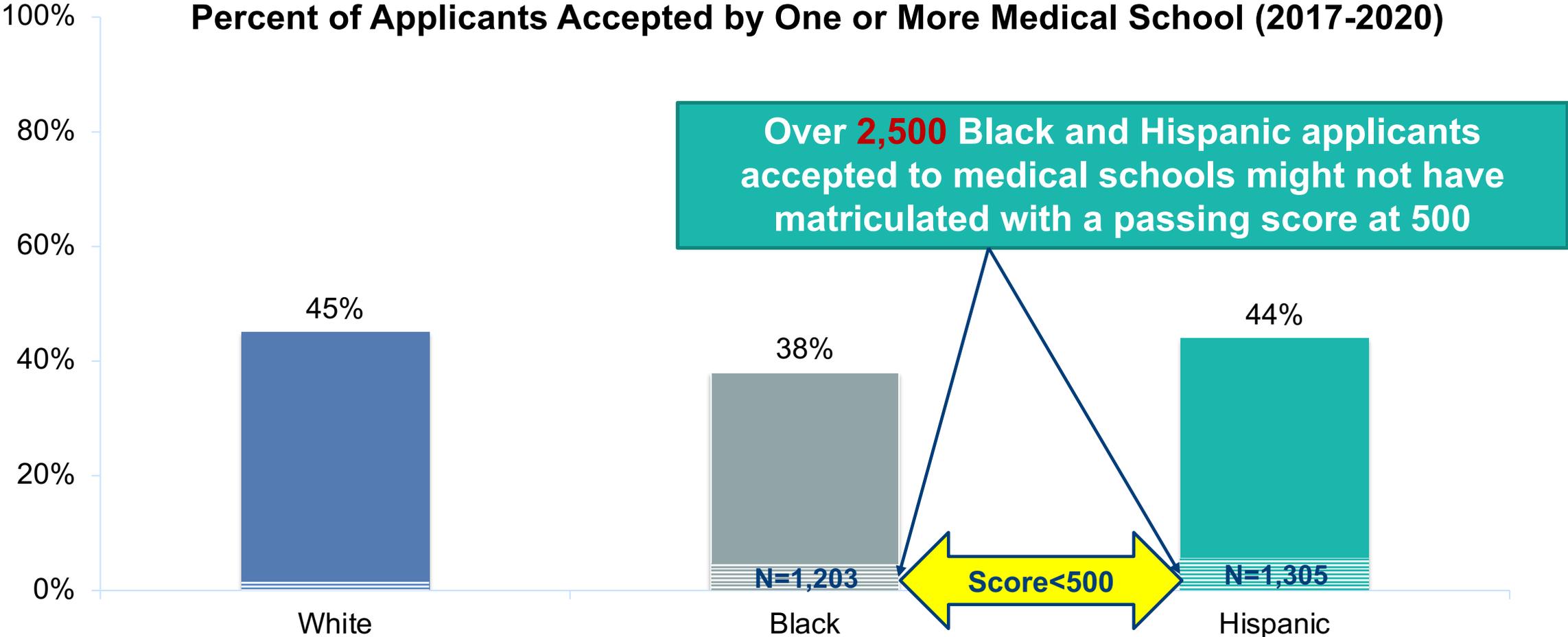
Percent of Examinees Passing at Different Passing Scores, by Group (Jan-Sept 2018-2020)



# But acceptance rates for white, black, and Hispanic applicants to medical school in 2017-2020 don't show these types of differences



# Though counterintuitive, pass/fail scoring would probably hurt minority applicants



# Rather than decrease the emphasis on test scores, pass/fail scoring may increase it

With pass/fail scoring, all that examinees and admissions committees would know about test takers' results is whether or not they passed

- Examinees with failing scores may be reluctant to apply
- Admissions committees might be reluctant to accept applicants with failing scores because they wouldn't know whether these applicants scored just below or well below the passing score
- For examinees scoring just below the passing score, the failing score might overshadow all of their other accomplishments

# Schools couldn't tailor admissions decisions to their local context

The higher the MCAT score needed to pass, the fewer the applicants who would meet that standard

- There wouldn't be information to judge who was close to the cut and might do well with academic support
- Again, data suggest that this would result in less, not more, diversity

The lower the MCAT score needed to pass, the greater the number of applicants who would meet that standard

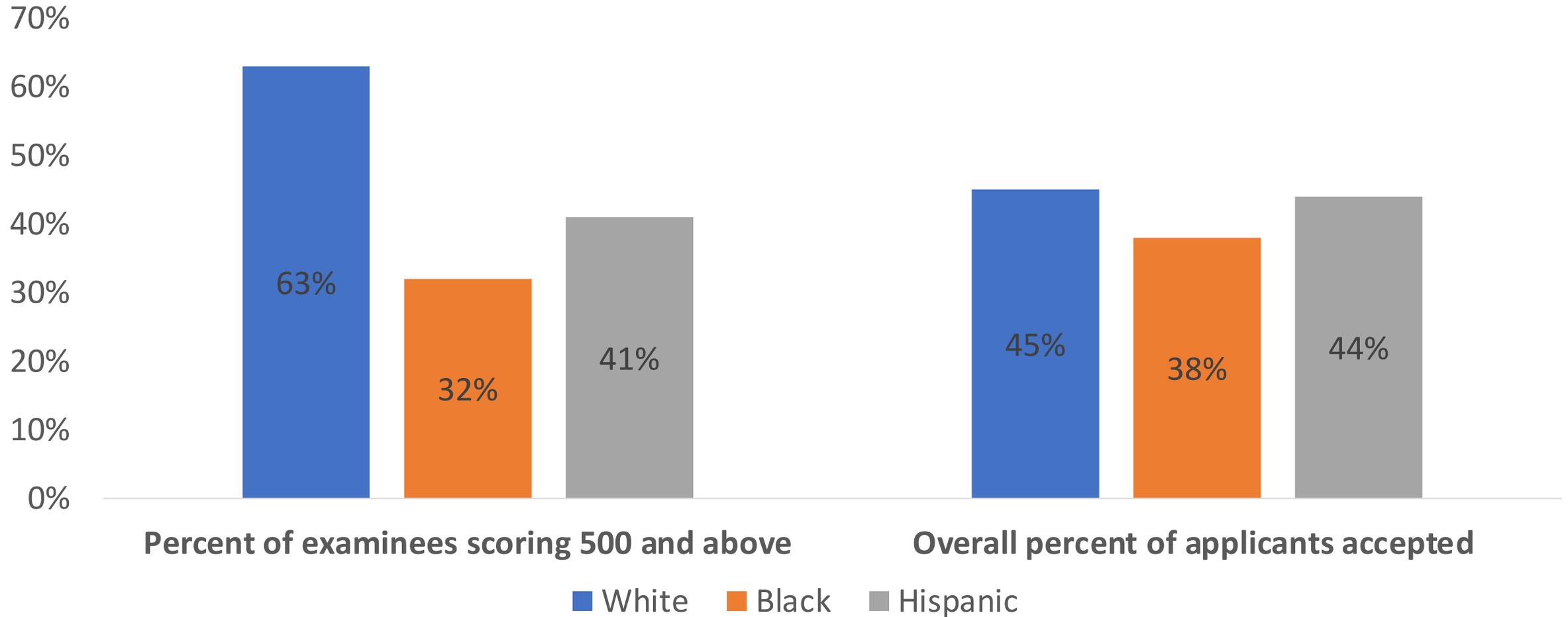
- Admissions offices with large applicant pools might have more difficulty processing the numbers of applications

# Does eliminating the MCAT eliminate the inequity?

Entry without success may hurt disadvantaged students more.

- Is it sustainable to accept more students who need support than schools have resources for?
- What are the downsides of admitting students who don't succeed?
- The MCAT provides information about students' academic preparedness—how can schools use this information to construct their classes in a way that enables them to support their students well?

# If acceptance rates are more similar than scores, how does that happen?



# The MCAT score scales are tailored to the needs of U.S. and Canadian medical schools

The statistical blueprints target precision at the range of scores where important decisions are made

- Medical schools can tailor acceptance decisions to their programs and applicant pools
- The score scale is designed to give special attention to applicants in the middle of the score scale who might otherwise overlooked

# Multiple sources of data show the value of MCAT scores in admissions decisions

- Survey data show that medical schools use MCAT scores to understand applicants' premedical preparation and predict students' performance from entry through graduation
- Predictive validity data show that MCAT scores are better predictors of students' performance in medical school, but using MCAT scores and undergraduate GPAs together provides a better signal of likely success and risk of academic difficulty
- Acceptance and matriculant data show that medical schools tailor their use of MCAT scores to meet multiple goals, including accepting those who may need support

# How do schools use MCAT scores?

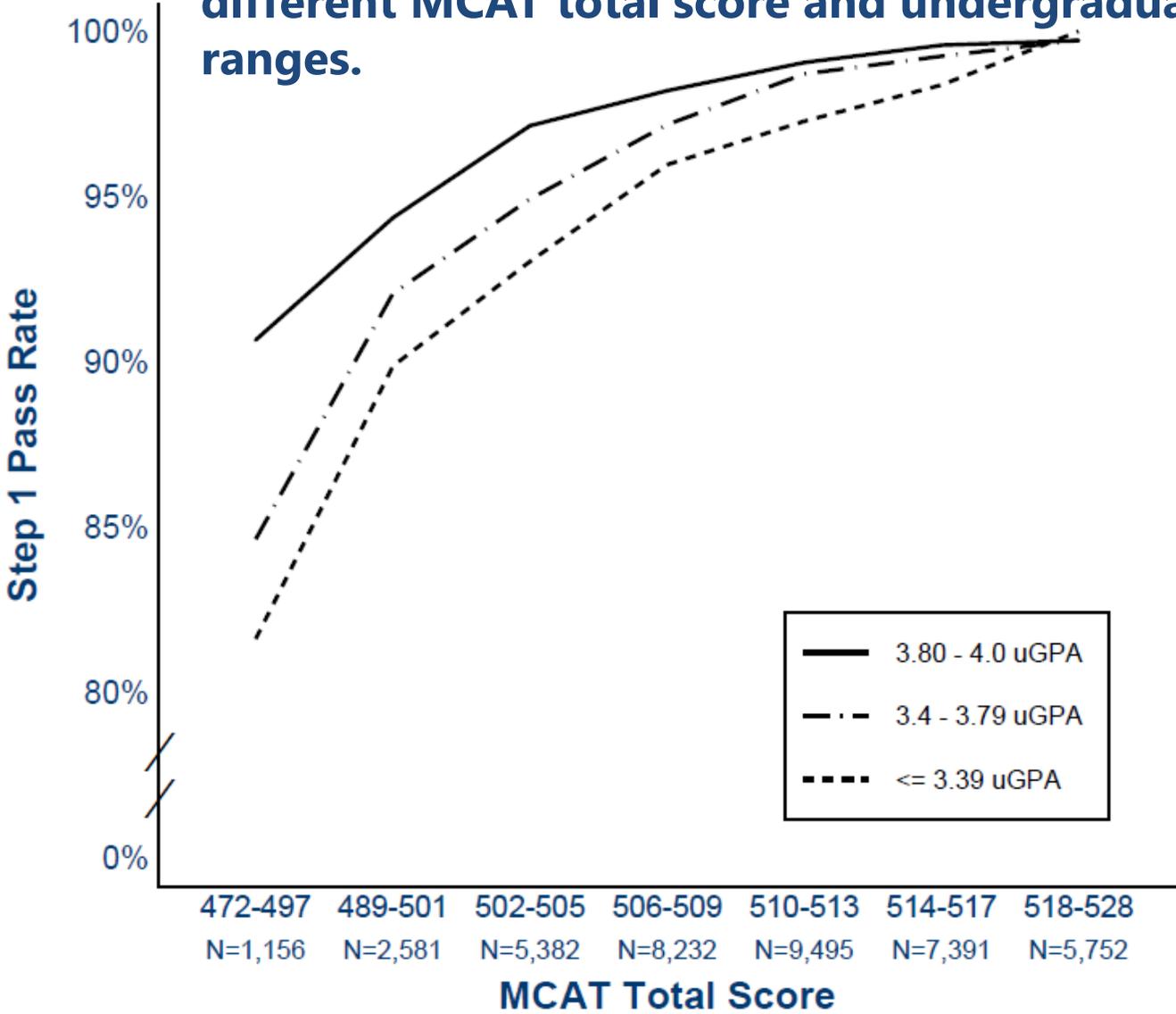
## To understand applicants' premedical preparation:

- Interpret grades for applicants from unfamiliar colleges and universities (43%)
- Judge the academic preparation of applicants with older grade data (53%)
- Look more carefully at scores for applicants whose MCAT scores didn't correspond to their grades in relevant courses (35%)
- Look more carefully at transcripts and other information for applicants whose section scores were uneven (31%)

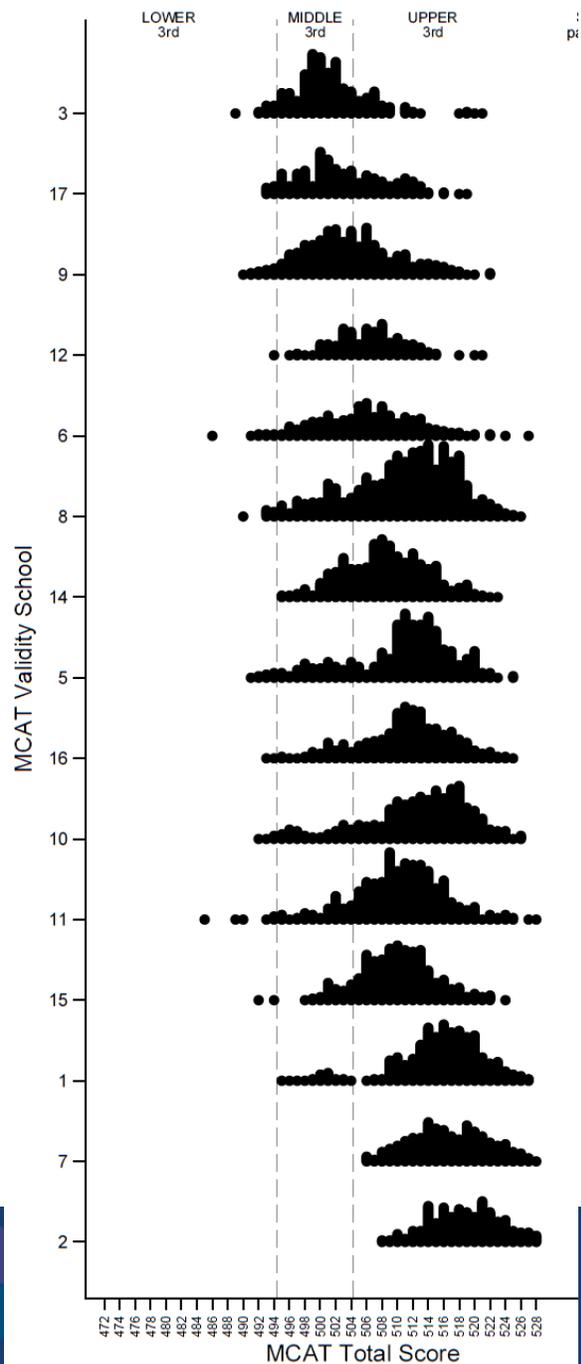
## To predict performance and anticipate needed support—to identify applicants who:

- Are likely to complete the preclerkship curriculum (70%), pass Step 1 (70%), and graduate in four to five years (42%)
- Are the most academically capable (70%), likely score well on Step 1 (20%)
- Have the needed reading comprehension skills (60%)
- May need additional academic support (56%)

# Median Step 1 pass rates at medical schools by different MCAT total score and undergraduate GPA ranges.

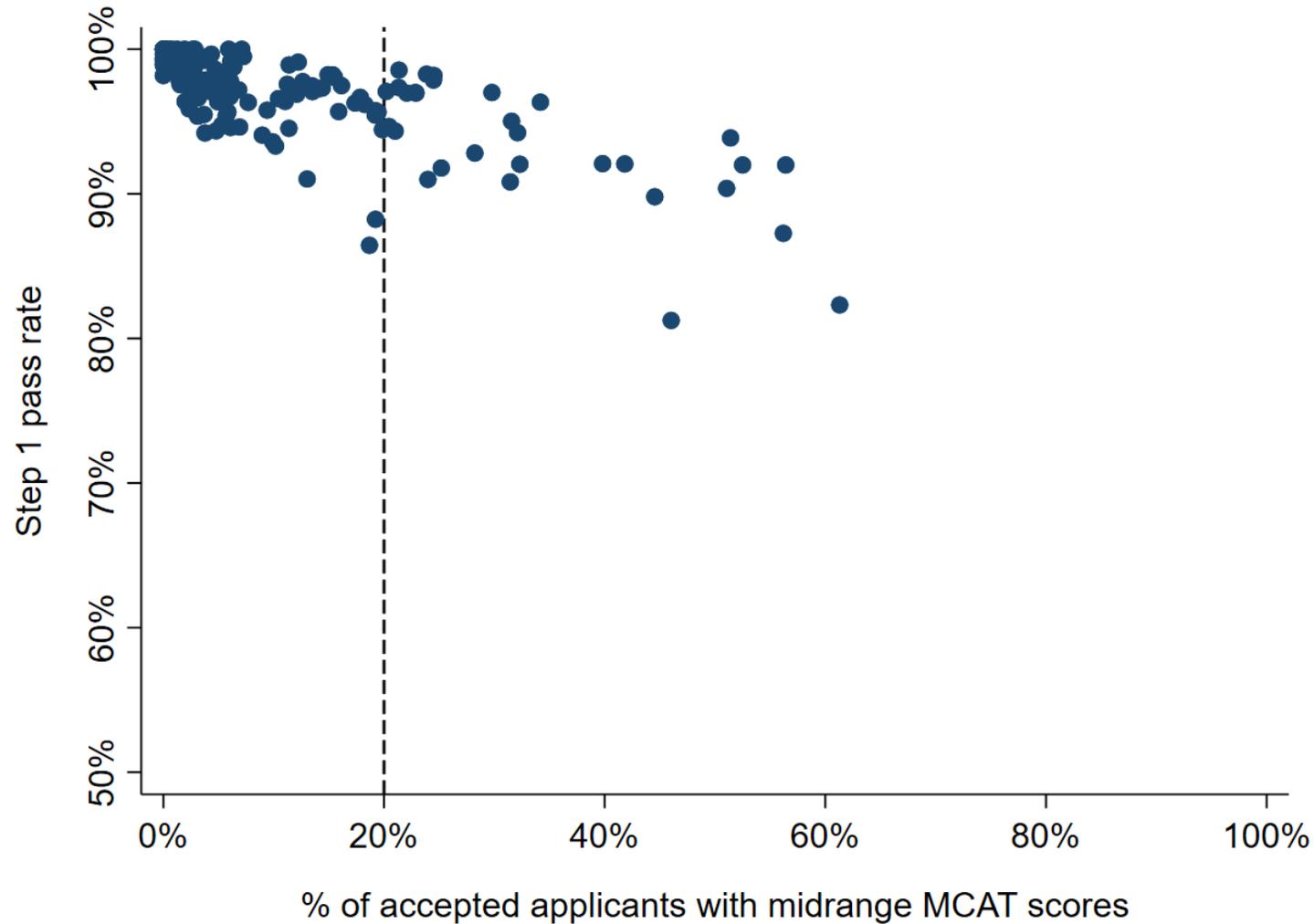


And the data show the value of using MCAT scores and GPAS together to make decisions



**Validity schools tailor acceptance decisions to their programs and applicant pools**

# Some schools that accept students with midrange scores show high success rates on Step 1



# Where do we go from here?

- What information/resources might help admissions officers achieve more equitable outcomes (e.g., similar acceptance rates by group) when the inputs like MCAT scores and undergraduate GPAs show group differences?
- There are average group differences in MCAT scores, and yet predictive validity research shows that MCAT scores predict medical student performance comparably for those same groups. How can we use MCAT scores and other application data to help you think about the availability of any needed supports?
- How can we better address holistically the preparation of premedical students, especially those from minority and disadvantaged backgrounds, to give them the effective foundational knowledge, reasoning, study skills, and confidence to do well on the MCAT exam and be ready for medical school?

# Activity: Identify any new research topics not reflected in the results of the March 2020 brainstorming exercise

Research topics map: <https://docs.google.com/drawings/d/19TdGj-cOTxB4CJPPbqyF3bhcYwNPDR403-xz0rOncL0/edit>

Relative contributions of educational disadvantages vs. test prep. Does test prep help disadvantaged students more?

Positive (or negative) deviant analysis: students that perform better (or worse) than their MCAT scores predict

School cluster analysis:  
 - How missions/focuses on social/educational outcomes relate to whether schools accept applicants with lower scores  
 - Schools with similar missions and similarly accept applicants with lower scores but have different outcomes  
 - Compare schools with different curricular approaches/learning environments  
 - HBCUs vs. other

Characteristics of high MCAT performing URiM/low SES students, particularly those from low-resourced schools (anti-deficit model)

High- vs. low- impact test prep strategies

Examine PMQ open-ended responses from students from disadvantaged backgrounds to gain insight into their strategies and challenges

Fit between school mission and applicant intention/motivation (characteristics of applicants applying to schools with similar vs. different missions)

Predictive validity for MCAT section scores:  
 - PSBB and CARS predicting Step 2 CS failure rate  
 - Combining the two natural science sections

Predictive validity of academic metrics:  
 - Separating BCPM, AO, post-bac/graduate GPAs  
 - Research hours  
 - Hours of science coursework

Types of support available for students with MCAT scores in the middle 3rd

Attitudes of admissions committees regarding acceptability of "+1" strategy.

Drivers of high MCAT average/barriers of accepting students with lower MCAT scores

Measure of fixed vs. growth mindset in test prep (PMQ)

Challenges faced by disadvantaged students in test prep: anxiety, defensiveness, feeling slapped back, etc. (PMQ)

Measure of motivation of examinees (PMQ)

Alignment/coordination among admissions, student affairs, faculty, etc. to construct a class

Impact of MCAT threshold (P/F) on admissions committee decision making:  
 - National cutoff  
 - Local school cutoff  
 - Peer group cutoff  
 - Cutoff based on z-score/SD

Impacts of COVID disruptions on admissions: :  
 - Changes in use of MCAT scores  
 - Changes in admissions outcomes  
 - Schools that are test optional

Admissions decision-making process:  
 - Weight of MCAT  
 - Reasoning/justification for accepting students with lower scores

Guidance (one-page outline) on how to use section scores

Training on holistic review/decision-making: case scenarios/best practices from similar schools that have successful outcomes

Information on students who do not succeed to set realistic expectations about how hard medical school is

Targeted test prep resources to help disadvantaged students:  
 - Test-taking strategies  
 - Different way of thinking (outside of the box, higher levels of Bloom's Taxonomy)  
 - Confidence  
 - Growth mindset  
 - Partner with aspiring docs, HSPEP, and others

Narratives/success stories for students:  
 - Admitted with modest scores  
 - Admitted with different section scores

Targeted outreach:  
 - Publicize "find an advisor"  
 - Reaching individuals interacting with students  
 - Digital strategies (e.g., podcasts) to increase impact of test prep resources

Local school report/validity data analysis

Validity findings for schools that are similar (in mission, class make-up, etc.)

Impacts of Step 1 P/F change on validity:  
 - Change in curriculum  
 - Change in preparation  
 - Change in test-taking approach/motivation

Predictive validity of MCAT against shelf exams  
 - Role of clinical science shelf exams in preparing for Step 2 CS given Step 1 going P/F

Longitudinal study of MCAT validity  
 - Specialty choice/selection  
 - Knowledge/care

Tailor time use study in test prep--using wearable gear/time tracking device to study time spent studying, working, sleeping, commuting, in class, with family obligations, etc.

Type your ideas in the "sticky notes" and drag and drop them into one of the four columns.



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