

Enhancing Diversity in Graduate Education through Admissions



IGEN

Inclusive Graduate Education Network

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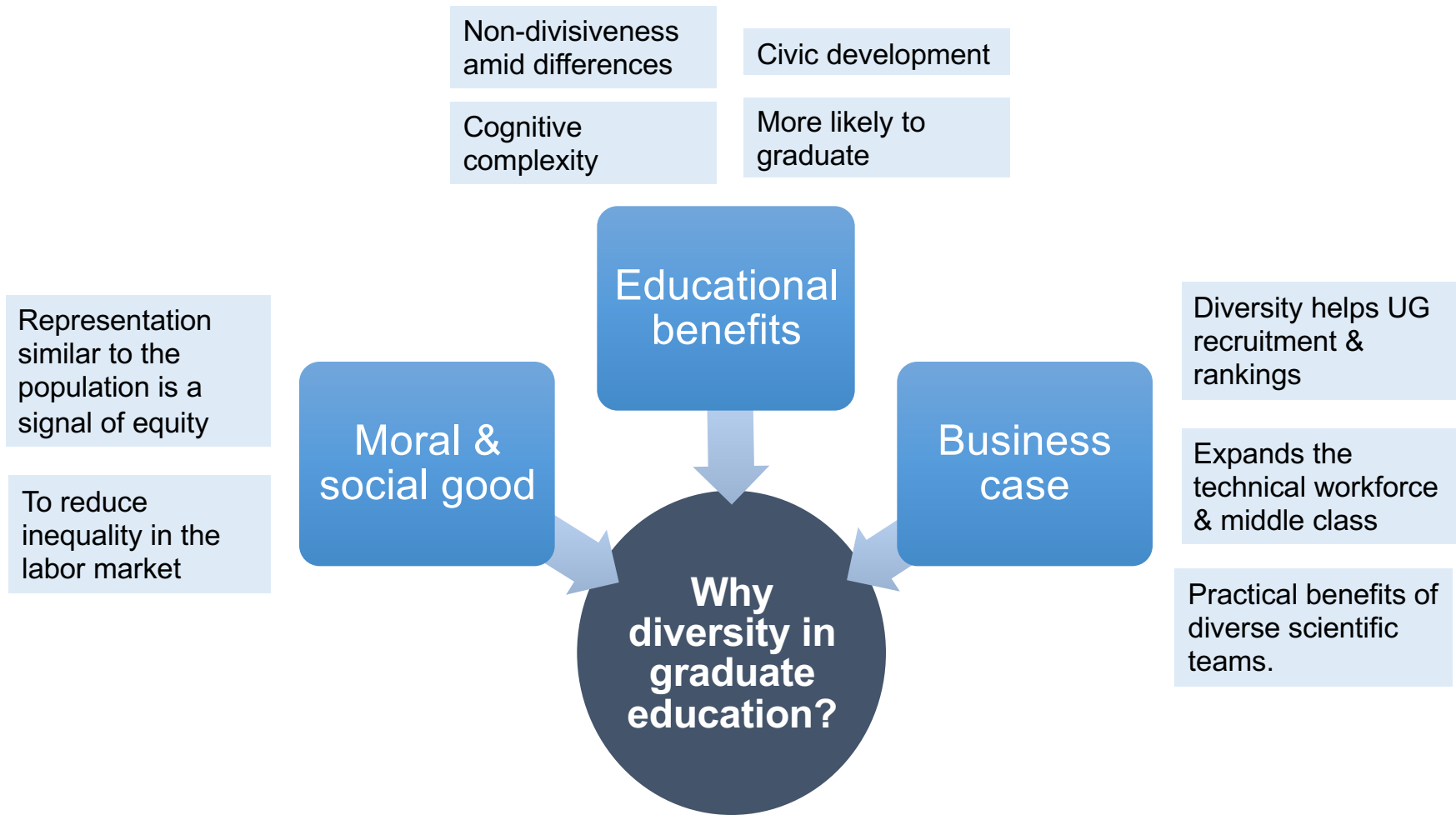
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Topics for this session

- **Introduction:** Why diversity?
- **Legal landscape**
- **Common admissions practices**
 - in large, selective doctoral programs
 - in one discipline: physics
- **Problems with common admissions practices**
- **The alternative: Holistic review**
- **Discussion**



Practical benefits of diverse scientific teams.

Research Cited More

- Freeman & Huang, 2014

Better Problem Solving

- Phillips et al. 2008
- Page, 2007

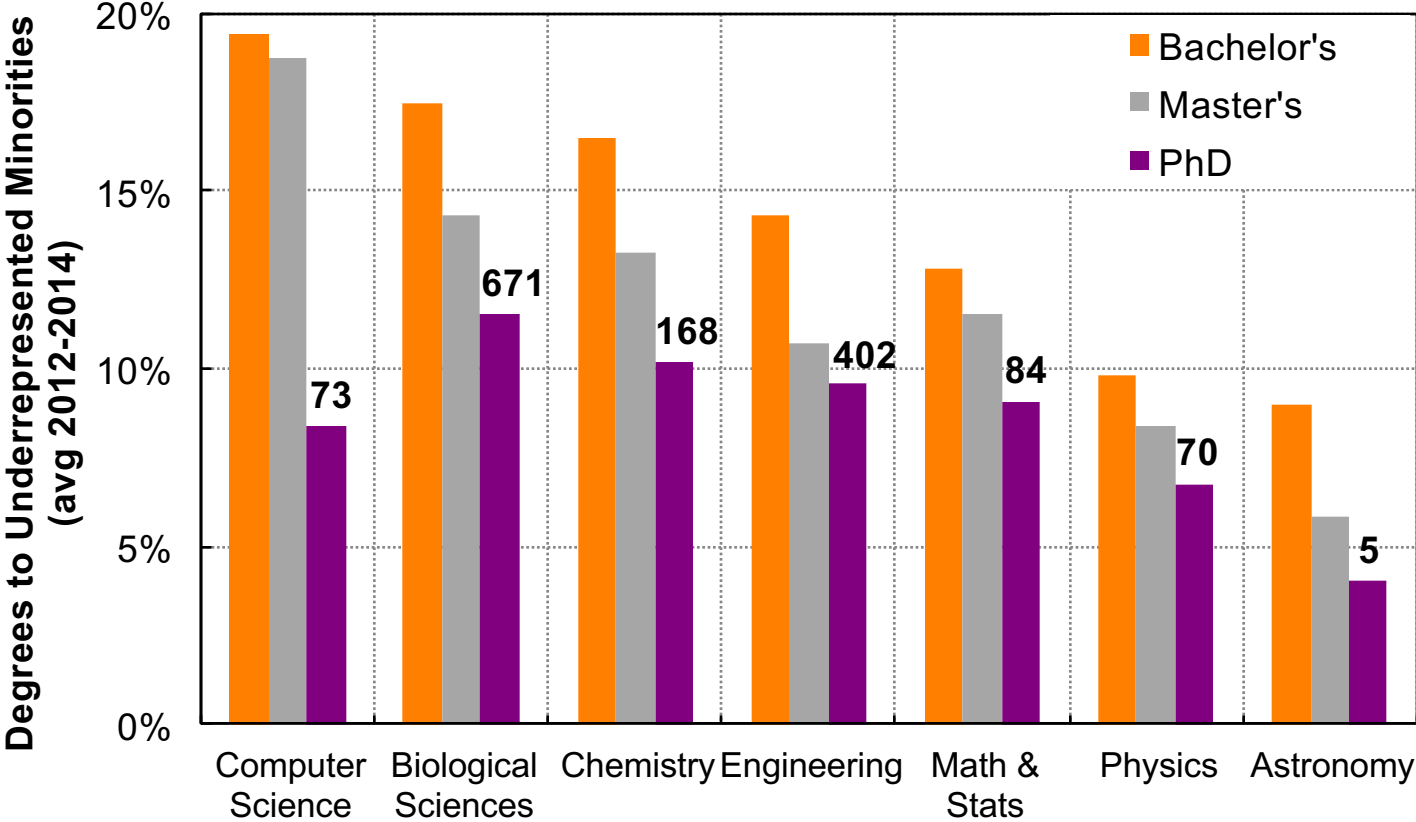
Better Ideas

- De VaanStark & Vedres, 2011
- Burt, 2004

Why focus on the diversity of large, selective graduate programs?

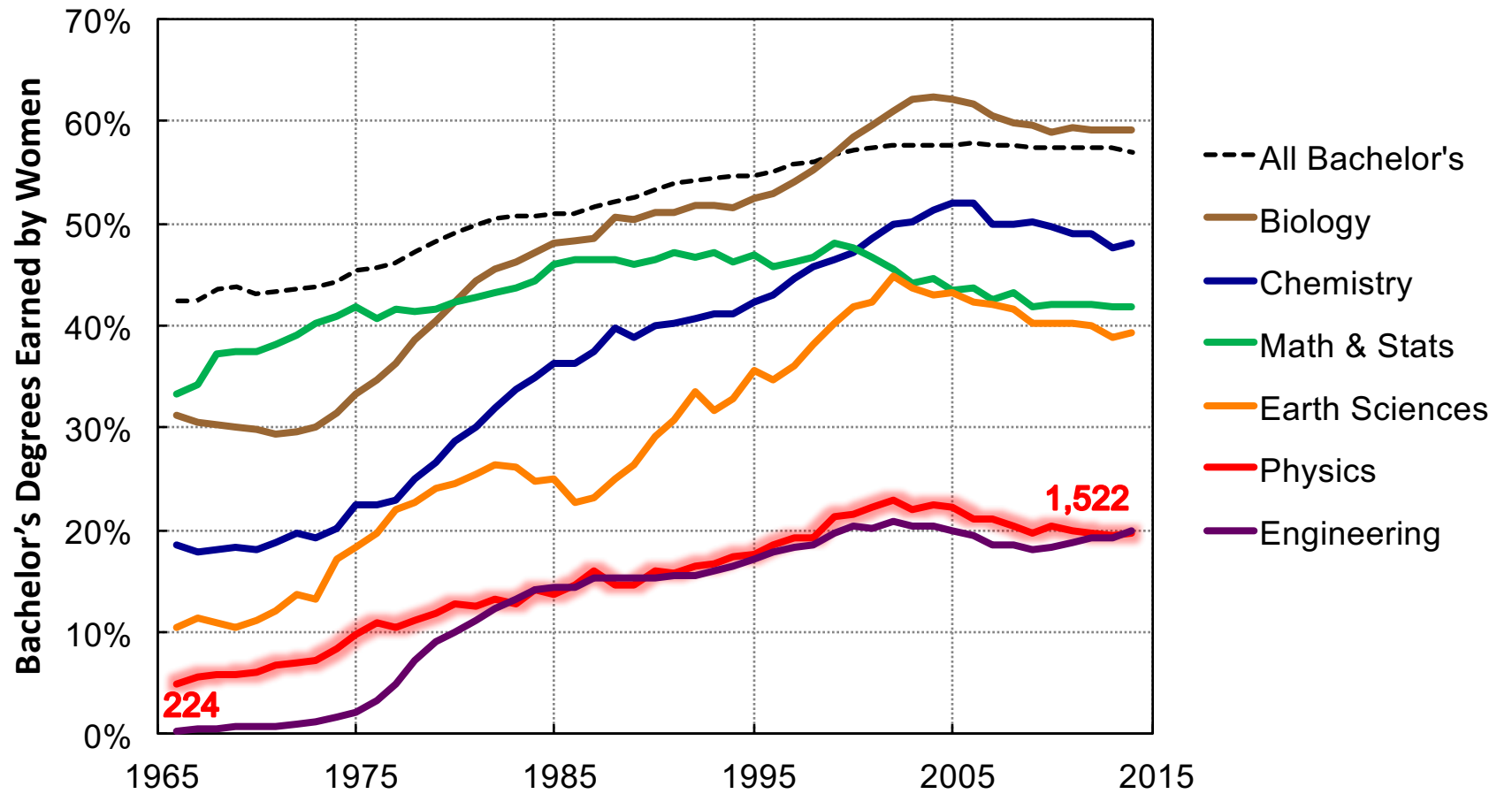
- **Opportunity to lead:** When powerful organizations within a system make changes, others are likely to follow.
- **Craft the future of science:** They create the pools from which the next generation of faculty & scientific leaders are selected.
- **Reduce inequality:** Gender and racial disparities in doctoral enrollment & degree completion are most profound in large, selective programs.

State of STEM



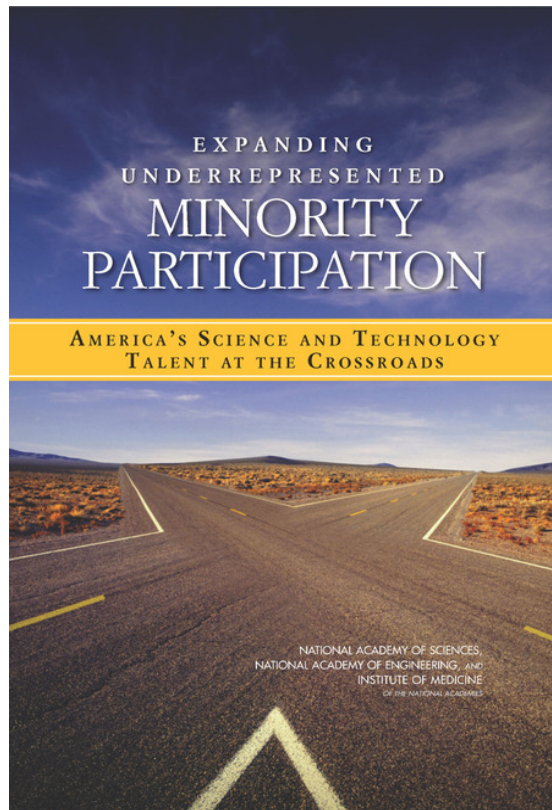
Source: National Center for Education Statistics and APS

State of STEM



Source: National Center for Education Statistics and APS

What can be done?



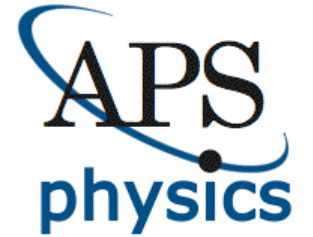
Top Priority Actions

- 1) Increase undergraduate retention and completion via strong academic, social, and financial support.
- 2) Teacher prep, college prep programs, and transition to graduate study.



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Inclusive Graduate Education Network



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Stanford University

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UC RIVERSIDE UNIVERSITY OF CALIFORNIA



PRINCETON UNIVERSITY



NORTHWESTERN UNIVERSITY



WISCONSIN UNIVERSITY OF WISCONSIN-MADISON

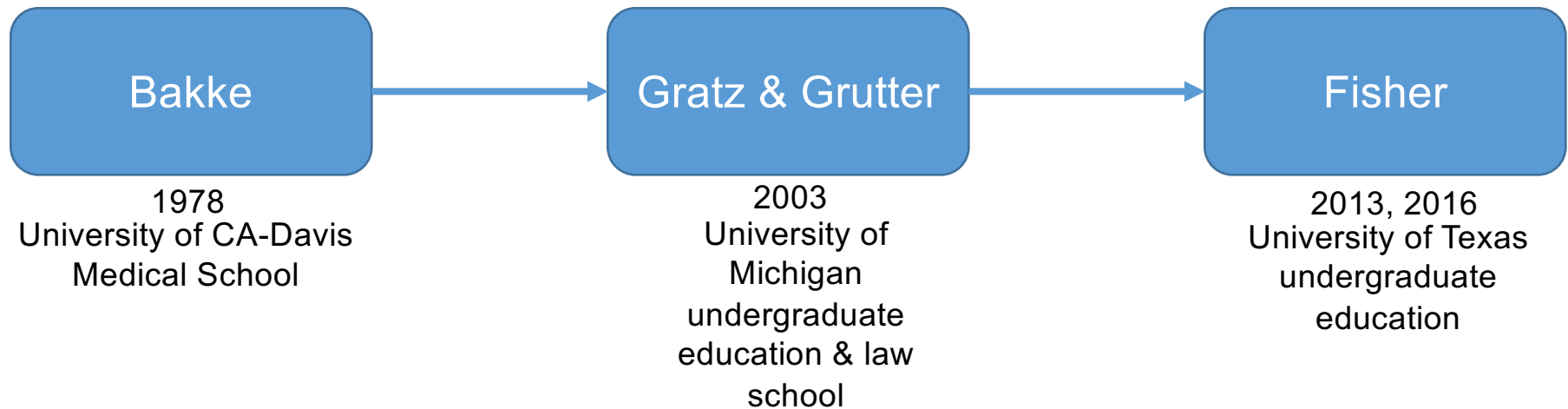
UC DAVIS UNIVERSITY OF CALIFORNIA



UNIVERSITY OF MINNESOTA

Legal Landscape

US Supreme Court on Affirmative Action



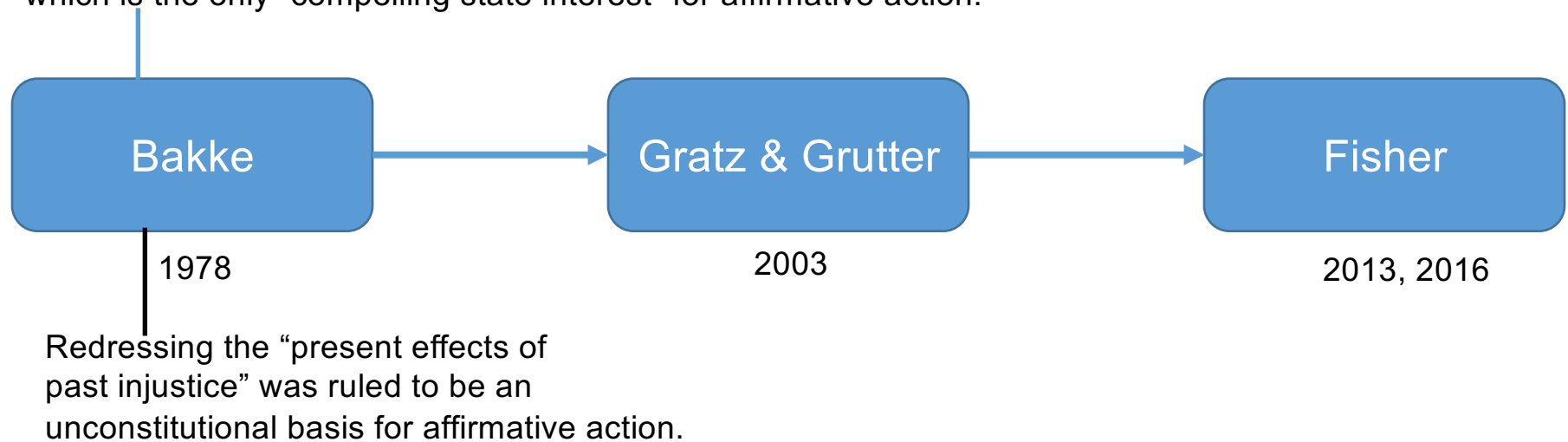
US Supreme Court on Affirmative Action

Racial quotas are unconstitutional.
Race is a permissible “plus factor,” BUT
policies must be “narrowly tailored” to achieve *diversity*,
which is the only “compelling state interest” for affirmative action.



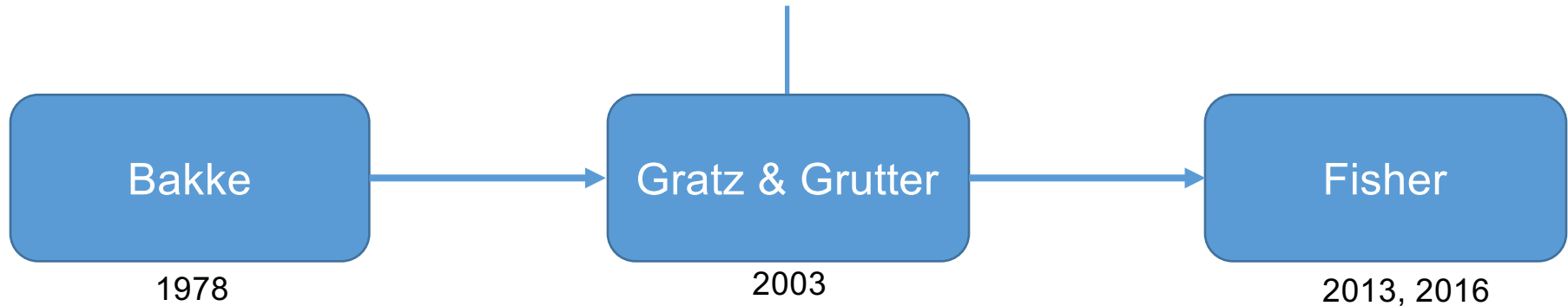
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US Supreme Court on Affirmative Action

Predetermined points for race/ethnicity unconstitutional (Gratz), BUT race *can* be considered as one of many factors (Grutter) in a holistic way.



US Supreme Court on Affirmative Action

Colleges must offer a “reasoned, principled explanation” for diversity.
Race-conscious admissions must
...be narrowly tailored to achieve diversity goals.
...withstand strict scrutiny (i.e., demonstrate that diversity can’t be achieved through means that don’t require the consideration of race).



8 states have banned affirmative action.

BALLOT INITIATIVES

- Arizona
- California
- Michigan
- Nebraska
- Oklahoma
- Washington

LEGISLATURE / GOVERNOR

- New Hampshire
- Florida

INSTITUTION-SPECIFIC

- University of Georgia

Elsewhere, key principles for practice from *Bakke* stand.

- Reserving seats or shares of seats for underrepresented students is not permissible.
- Reviewers should use a common evaluation process for all applicants.
- Race should be just one of several individual characteristics assessed as a plus factor.
- Every applicant should be evaluated as an individual, not assumed to represent a broader identity category.
- Programs should not single out specific racial/ethnic groups, but consider contributions that all groups make to diversity.

Source: UCLA Civil Rights Project, 2002

Discuss:

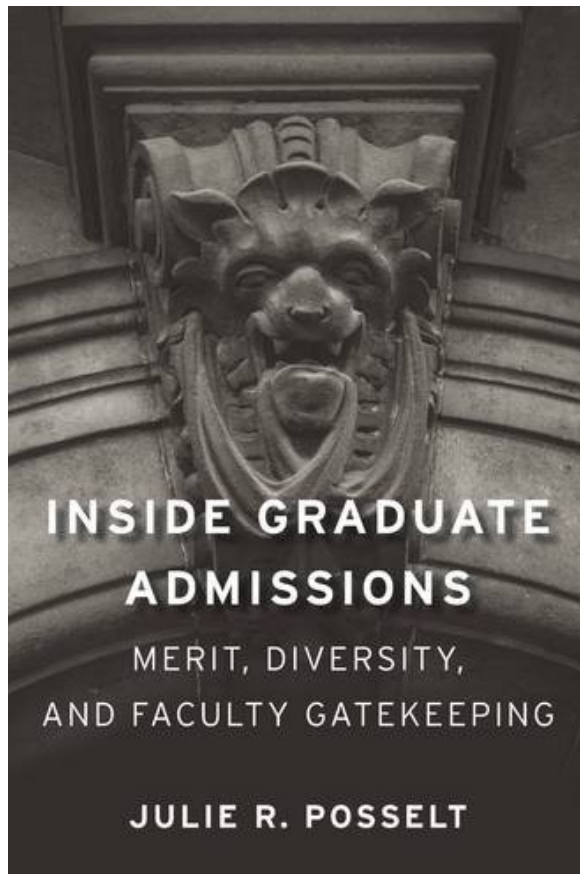
In what ways is it legal for admissions committees to consider race?

- Take 5 minutes to discuss this question at your table.
- Is everyone is on the same page?

Legal Landscape: Takeaways

- Under specific conditions, race-conscious admissions policy is constitutional outside the states mentioned.
- Parameters are tightening. Universities & graduate programs must seek diversity in multiple ways, and have a “reasoned, principled explanation” for diversity’s value in their context.
- Weighing race as an admissions consideration is different than accounting for how dynamics of race in America may shape...
 - ...applicant distributions of grades, test scores, and institutional affiliations
 - ...the viewpoints that applicants are likely to contribute.
- Admissions committees need not be color-mute, & will be best protected legally if admissions policy is defined. Ad hoc policy is hard to defend.

Common admissions practices in large,
highly selective PhD programs



Harvard University Press, 2016

- *Research Questions:*
 - How do faculty individually judge & collectively select applicants to highly ranked Ph.D. programs?
 - What assumptions about merit guide faculty judgment
 - How do disciplinary norms shape faculty judgment?
- Comparative ethnographic case study
- 10 programs in 3 public & private universities
 - 85 interviews with professors & a few graduate students
 - 22 hours of admissions meeting observations in six of the programs

Programs Studied

	Humanities	Social Sciences	Natural Sciences
High Consensus	Philosophy (2 programs)	Economics	Physics
Moderate Consensus	Classics	Sociology	Astrophysics
Low Consensus	Linguistics	Political Science	Biology

Evaluative cultures explain apparent tensions between definitions of merit & valuing diversity.

- *Preference for specific criteria* was rooted in beliefs about what they signal. Those beliefs relate to their roles as scholars in highly ranked programs.
- *Preference for a process that is efficient and collegial.* Goals: Quantify quality & minimize conflict.
- In high-consensus fields like physics, *shared disciplinary norms* shaped working definitions of “merit”, ideas about intelligence & what the admissions process should look like.
- In low-consensus fields like political science and linguistics, *individual preferences* were as important as shared preferences in high-consensus fields and reflected patterns of homophily (“love of the same”).
- *Ambivalence about organizational change*, especially reforms related to diversity and equity.

Two-tiered review is used in most places.

Initial screening	
Conceptualizing merit	Conventional achievers with low perceived risk of attrition
Important criteria	“Numbers” in context of undergraduate prestige & curriculum rigor
Relationship of merit & diversity	Standard of merit may be in tension with racial/gender diversity aims.

Two-tiered review is used in most places.

	Initial screening	Later rounds of review
Conceptualizing merit	Conventional achievers with low perceived risk of attrition	Future of the discipline
Important criteria	“Numbers” in context of undergraduate prestige & curriculum rigor	Experience with and dispositions for research; Unique perspective; research interests align
Relationship of merit & diversity	Standard of merit may be in tension with racial/gender diversity aims.	Diversity is a component of merit.

Why do faculty rely on GRE scores?

Theory of cultural & evaluative scripts¹ was used to interpret the data

Def: Stories that people tell themselves to justify taken for granted behavior

Faculty associate GRE scores and grades (conditional on curriculum rigor and institutional prestige of where the grades were earned) **with**

Intelligence, which they associate with

Belonging in an elite intellectual community

Risk profile

¹ Goffman, 1959; Lamont, 2009

GRE Scores & Intelligence

In interviews, 50% of the sample volunteered some idea about intelligence when asked what GRE scores signal

(e.g., “sheer intellectual horsepower”, “native intelligence”)

In meetings, >50% of GRE mentions were what I classified as smart talk.



“Someone who does that well on the GRE is unlikely to be lame-brained. They are likely to be smart.” (philosophy)

“Freaking genius” (political science)



“I question she has what it takes.”

“[He was] from a different planet and we were confident that this person was not going to be one of us. He’s not going to be a full member of the scientific community.” (biology)

Risk Aversion

- Risk aversion was understood to be an obligation & luxury
- But there were examples of challenging the risk aversion script.

Example 1 of the risk aversion script and a challenge to it:

Prof. Bob: “Her GREs [of 690, 740, & 4.5] present a risk for her not succeeding” particularly because she “didn’t attend a top-rated university.”

Prof. Lynn: “She may have undershot... This is an area that can be gendered... We have to be very careful here.”

Prof. Bob: “All in all, it gives me doubt.”

[Student ultimately waitlisted]

PHILOSOPHY

Example 2 of the risk aversion script & challenging it:

Prof. Denise: “She might be a bet, but it could be a good bet... If we are going to increase diversity, these are the students we need to take seriously.”

Prof. Jack: (Tentatively) “What’s the diversity?”

Dept. Chair Nancy: “Family financial hardship.”

[Committee agrees to move her forward, but discussion continues.]

Dept. Chair Nancy: “It will be good for the whole faculty to take a look at her file. It seems pretty clear that she’s a risk, but if we’re going to increase diversity, we have to take risks.”

Prof. Denise: “And she seems like a good bet.”

[Student ultimately rejected after being waitlisted and attending recruitment weekend]

LINGUISTICS

Astrophysics committee

	Prabhat	Jeff	Juan	Wayne	Chris
Title	Assoc Prof	Assoc Prof	Assoc Prof	Asst Prof	Ph.D. candidate
Institutional affiliations	Ivy	Ivy	Ivy	Big Ten	Big Ten
Born	Int'l	Domestic	Int'l	Domestic	Domestic

Prabhat: He grew up in a yurt in the Himalayas, was raised by his mom and grandma after his father died at an early age, and the next neighbors were two mountains over. He then found his way to a major U.S. public research university and has since started the only organization for the discipline in the Himalayan region.

Jeff: But do we think he can succeed?

[long pause]

Prabhat: He's the most amazing case we've ever seen.

George: He would bring some personality to the department. I commit to look after him and fund him through the prelims.... He presents himself as quite intelligent.

Chris: Excellent idea to give him a chance.

[Student ultimately admitted and enrolled.]

Problems with the typical approach

Blind spots

Limited efficacy

Overreliance on metrics without considering context

There are blind spots in faculty assumptions.

- Some assumptions are highly gendered and racialized.
- Assumptions about risk are informal and subject to biases. For example,
 - Faculty place undue confidence in their own ability to predict who will be successful.
 - It's difficult to reliably predict Ph.D. completion for populations who rarely enroll (i.e., problem of small N)
- Student outcomes result from what they bring to the table AND from the educational experience & climate we provide (Lovitts & Nelson, 2000).

Implicit bias

Milkman et al.: “What comes before”

- Field experiment compared faculty responses to email inquiries from prospective graduate students.
- Emails sent to 600 professors, identical in all ways except the name on the bottom.
- Professors responded significantly less often to prospective students whose names suggested they were Black, Latino, from Chinese, Indian, and/or female.
- And when they did respond, they took significantly longer.
- Effects strongest in private universities.

White Male Applicants	Female and URM Applicants
→ Judged based on potential	→ Judged based on proven ability
→ Evaluators focus on qualifications at the expense of shortcomings	→ Evaluators focus on shortcomings at the expense of qualifications
→ Evaluators happy with a “ good fit ”	→ Evaluators need a “ perfect fit ”
→ Selected based on how they have performed (absolute)	→ Selected based on performance of others in their group (relative)

Adapted from a workshop developed by the Cornell University ADVANCE Center

Strategies to Reduce Implicit Bias in Selection

- Devote adequate time.
- Avoid premature ranking (anchoring bias).
- Use a rubric or other evaluation form.
- Critically analyze supporting materials.
- Be transparent: What criteria? Are they the right criteria?
- Appoint diverse groups for file review and encourage maximum participation.
- Be accountable. Be prepared to explain your decisions.
- Check your own implicit bias using the assessments at <https://implicit.harvard.edu/implicit/>

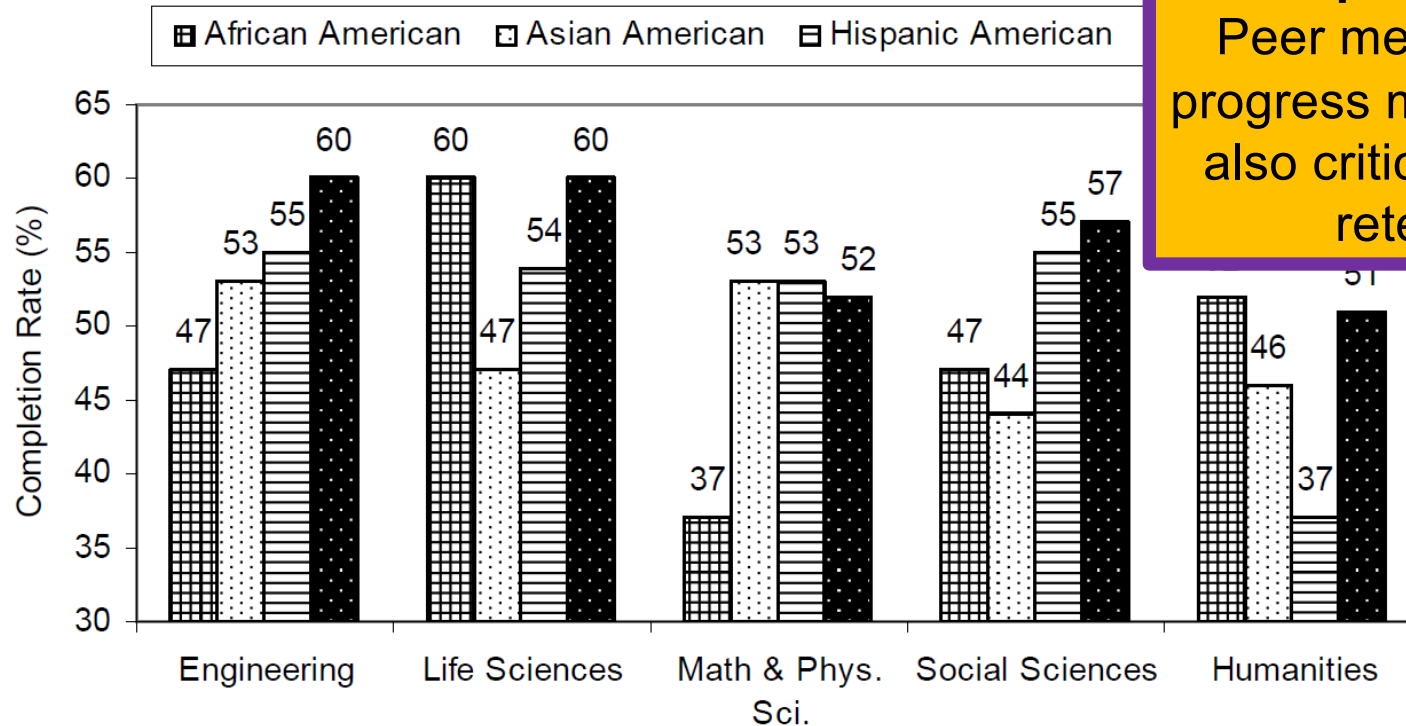
It doesn't work
much better than
this in predicting
long term success.





Council of Graduate Schools

Ph.D. Completion and Attrition: Analysis of Baseline Demographic Data from the Ph.D. Comple



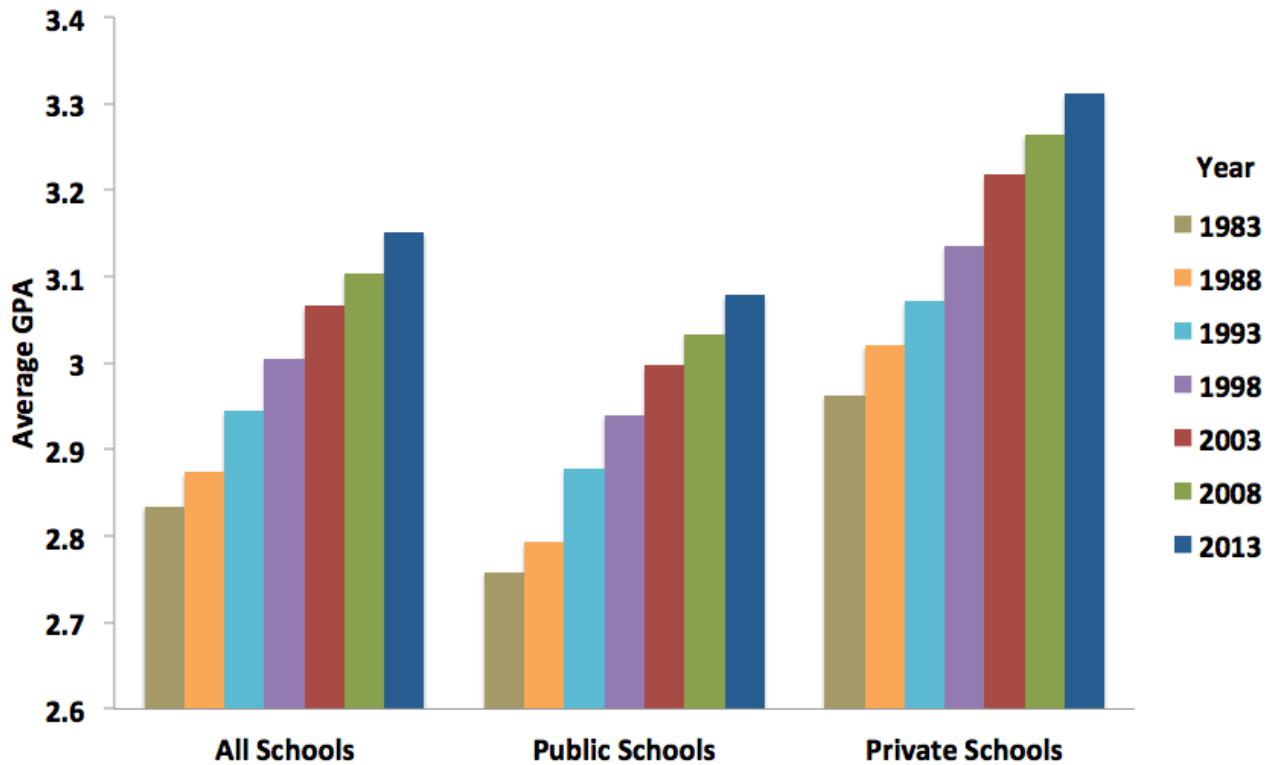
Admissions is only one reason for low completion rates. Peer mentoring and progress monitoring are also critical factors in retention.

Typical weights given to
undergraduate GPA
and test scores
stack the deck against
the very populations that
universities say they
want to serve.



Patterns of grade inflation undermine opportunities for minority participation.

Recent GPA Trends Nationwide
Four-Year Colleges & Universities



Most STEM URM Students Attend State Colleges

<u>URM Engineering #BA/BS</u>	<u>Rank</u>	<u>URM Physical Sciences #BA/BS</u>
University of Florida (240/yr)	1	Florida International University (85/yr)
Florida International University	2	Xavier University of Louisiana
Texas A & M University-College Station	3	The University of Texas at Austin
University of Central Florida	4	University of California-Santa Barbara
Georgia Institute of Technology-Main Campus	5	Texas A & M University-College Station
California State Polytechnic University-Pomona	6	The University of Texas at El Paso
The University of Texas at El Paso	7	University of California-Los Angeles
The University of Texas at Austin	8	University of Florida
North Carolina A & T State University	9	Spelman College
The University of Texas-Pan American	10	University of California-Irvine
Cal Polytechnic State University-San Luis Obispo	11	University of North Carolina at Chapel Hill
The University of Texas at San Antonio	12	University of California-Santa Cruz
Arizona State University-Tempe	13	University of Arizona
University of California-San Diego	14	University of New Mexico-Main Campus
University of Houston	15	Florida State University
San Diego State University	16	Georgia State University
Morgan State University	17	Jackson State University
Prairie View A & M University	18	The University of Texas at San Antonio
Alabama A & M University	19	Columbia University
North Carolina State University at Raleigh	20	University of Memphis
Southern University and A & M College	21	CUNY City College
Howard University	22	CUNY Graduate School and University Center
Tuskegee University	23	Savannah State University
University of Maryland-College Park	24	Alabama A & M University
University of South Florida-Main Campus	25	Georgia Southern University
Virginia Tech (38/yr)	26	Tennessee State University (15/yr)

Frequent misuse of GRE scores.

- ETS's document, "Guide to Use of Scores" is not followed (or often even known of)
- Significant race and gender differences in scores
- Scores' correlations with success are questionable

Pop Quiz:

With all else equal, which folder do you admit?

Folder A

GRE-Q: 740 (80%)

Folder B

GRE-Q: 800 (perfect)

From ETS Guide to Use of Scores:

It is an inexact measure; **only score differences that exceed the standard error of measurement of a given score can serve as a reliable indication of real differences** in applicants' academic knowledge and developed abilities.”

CONSIDER THE STANDARD ERROR OF MEASUREMENT

~60 points on old GRE scale (200-800).
(3pts on new scale 130-170).

740 = 800 = perfect!

<http://www.ets.org/gre/institutions/scores/guidelines/>

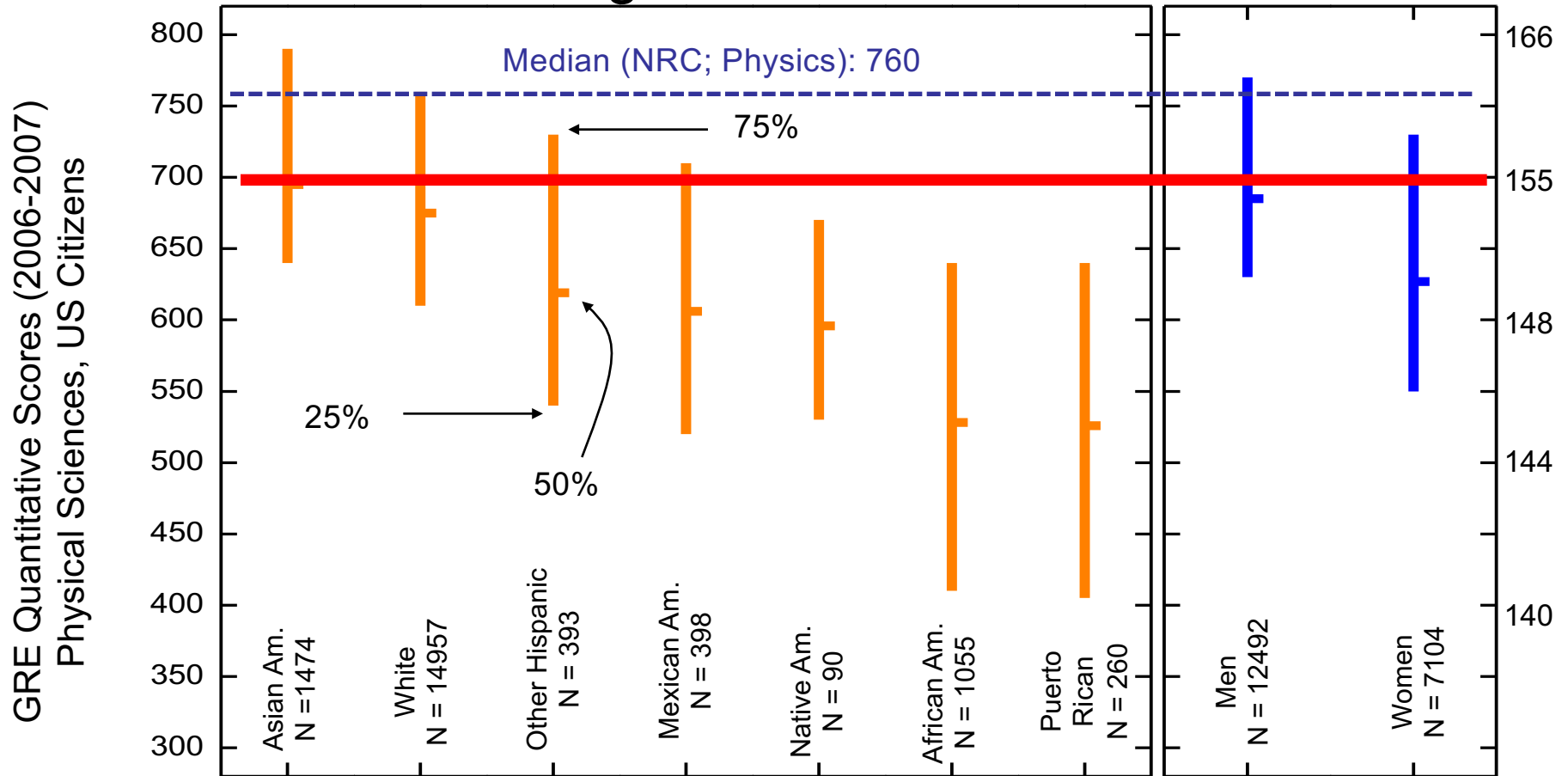
From ETS Guide to Use of Scores:

Guidelines:

- A cutoff based only on GRE scores should never be used as a sole criterion for denial of admission
- Any department considering the use of a cutoff score should compile a rationale justifying the appropriateness of such a score for each measure:
 - (1) evidence that the proposed cutoff score for the measure usefully distinguishes between individuals who are likely to succeed in graduate school and those who are not, and
 - (2) the impact of the proposed cutoff score on the institution's goals related to diversity

<http://www.ets.org/gre/institutions/scores/guidelines/>

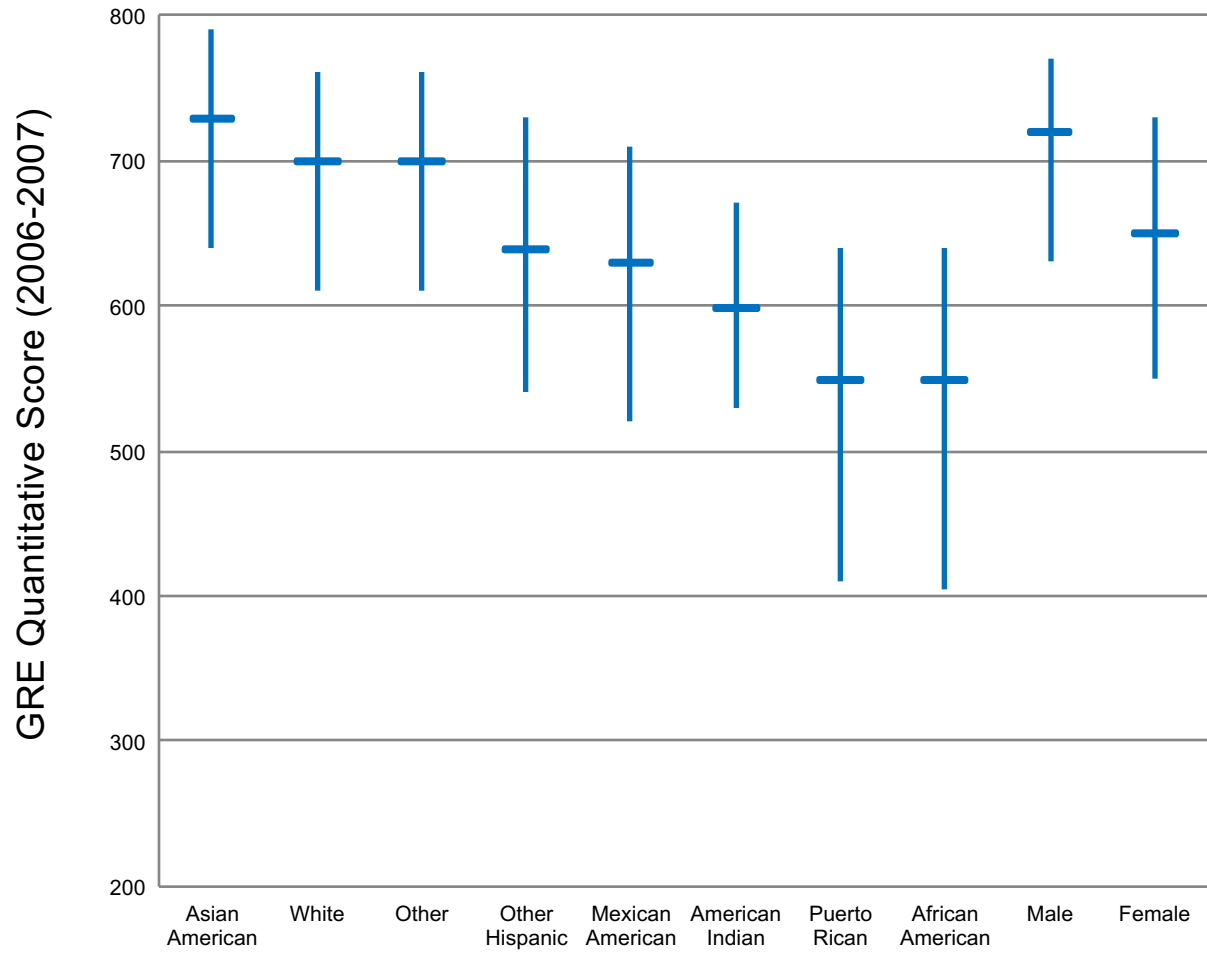
From ETS document, "Factors that can influence performance on the GRE general test 2006-2007"



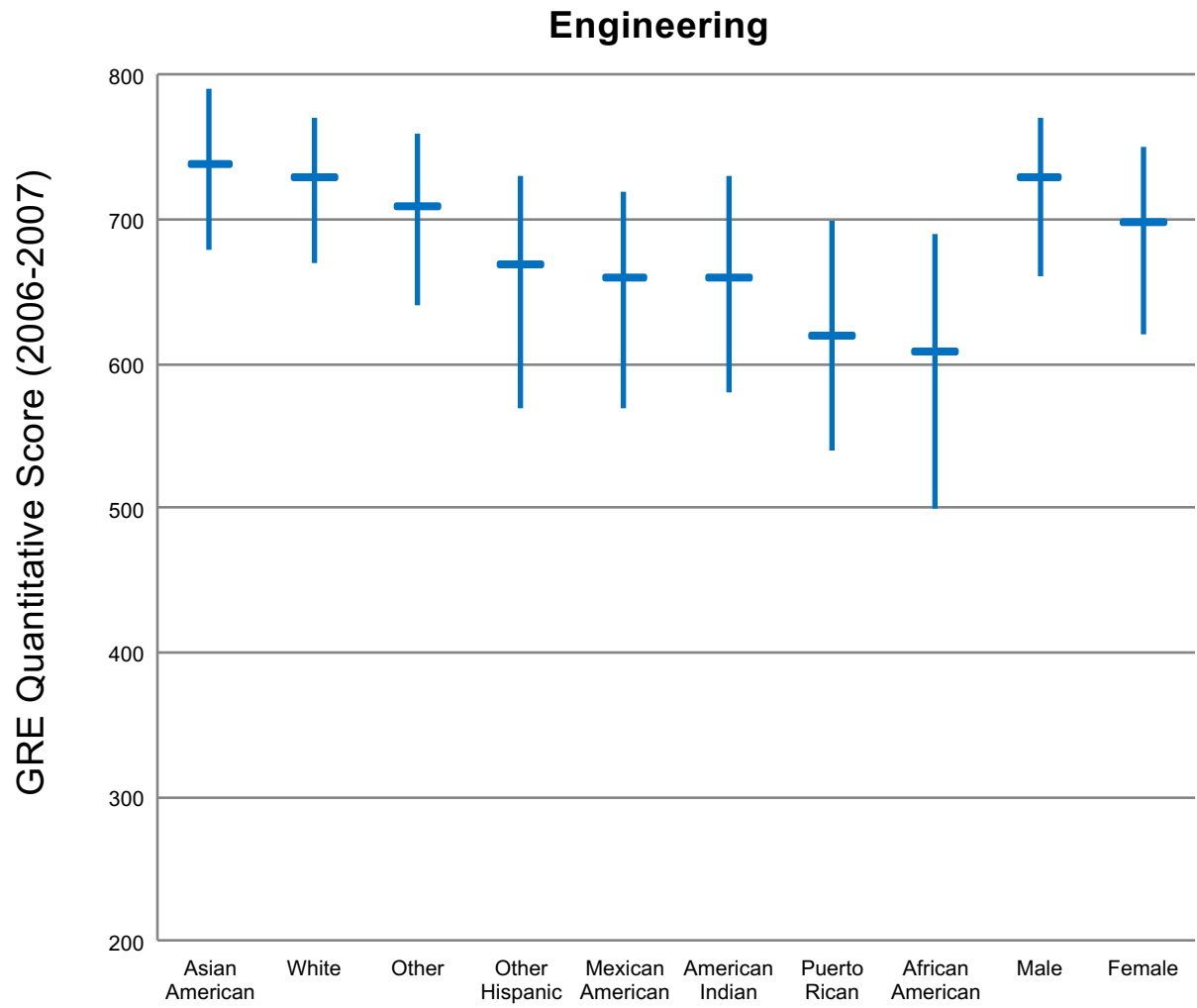
GRE Test Disparities Are...

- Technically not “bias”
- Nearly independent of intended graduate major
- Qualitatively unchanged when controlling for undergraduate GPA
- Qualitatively the same for
 - GRE Subject test
 - SAT Math
 - 8th grade math achievement tests
 - 4th grade math achievement tests
- **A feature of standardized testing**

Physical Sciences

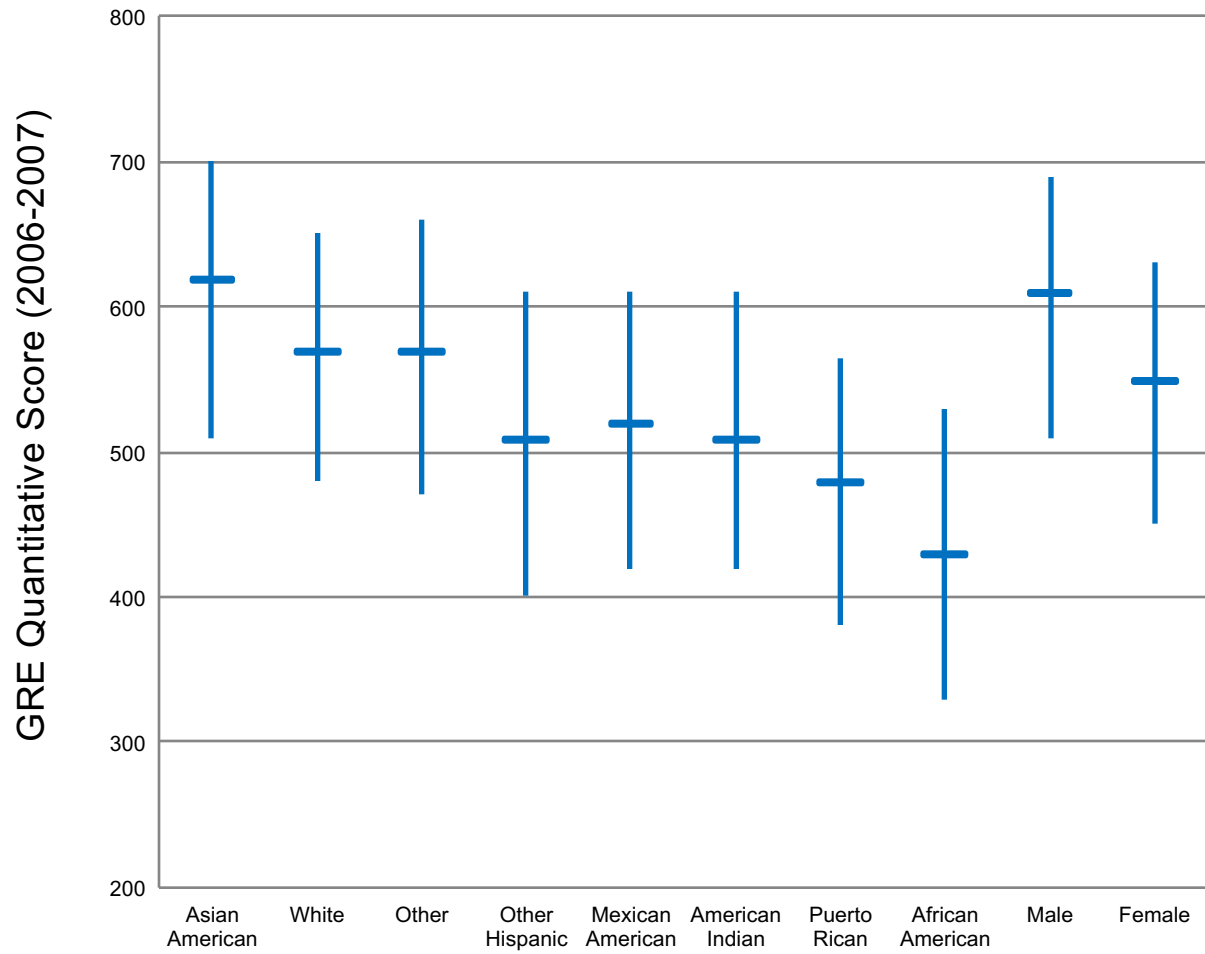


SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"



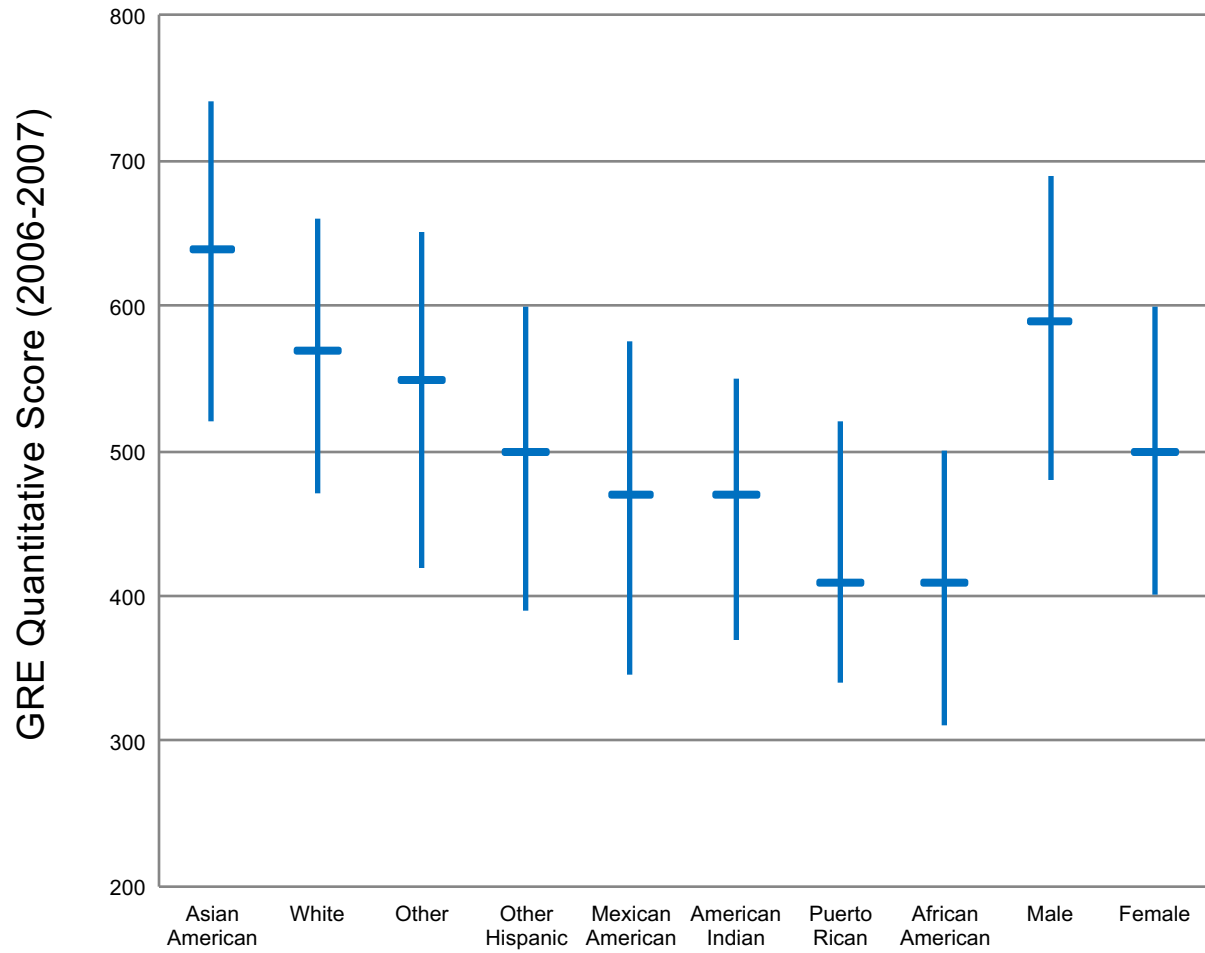
SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"

Life Sciences



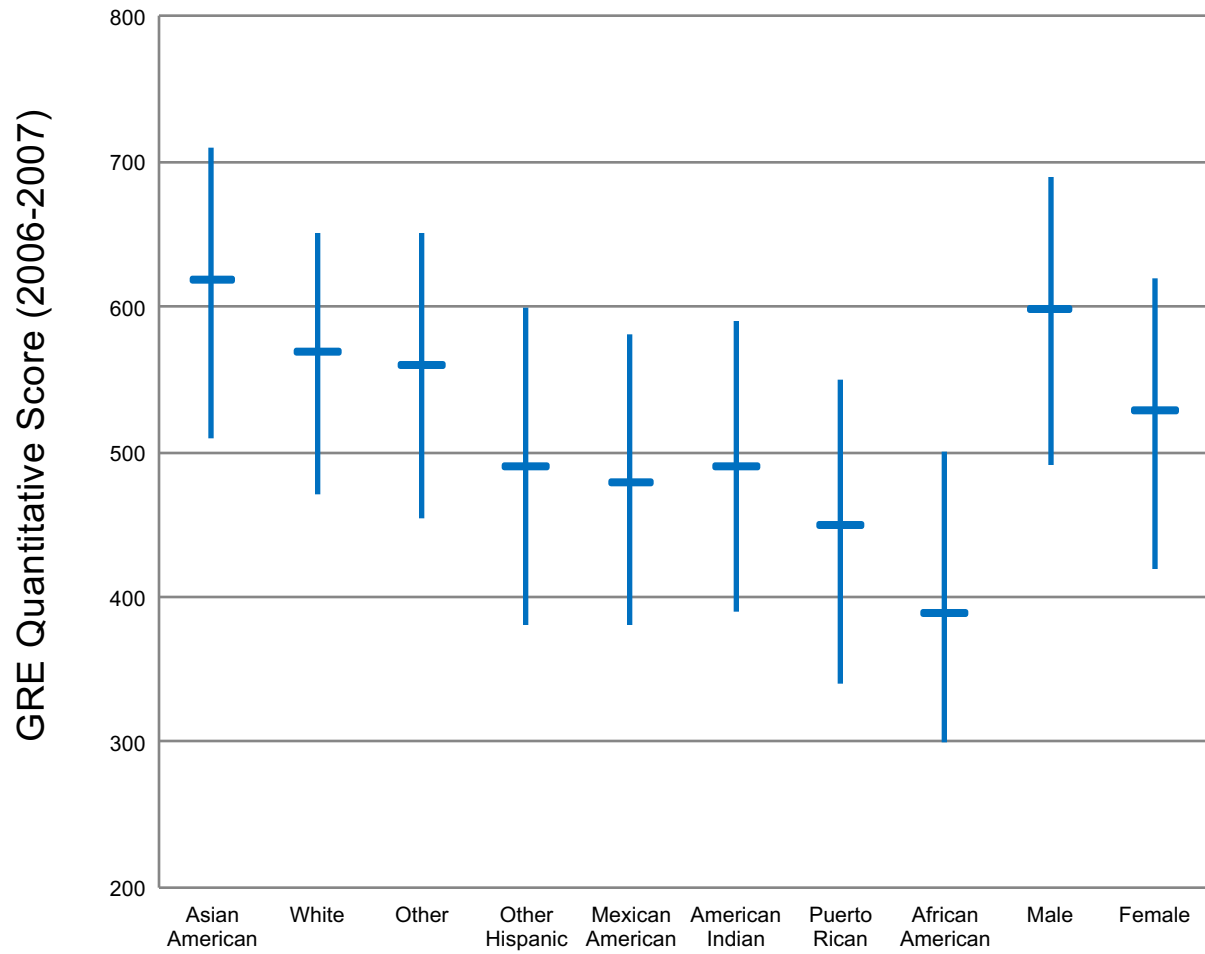
SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"

Business

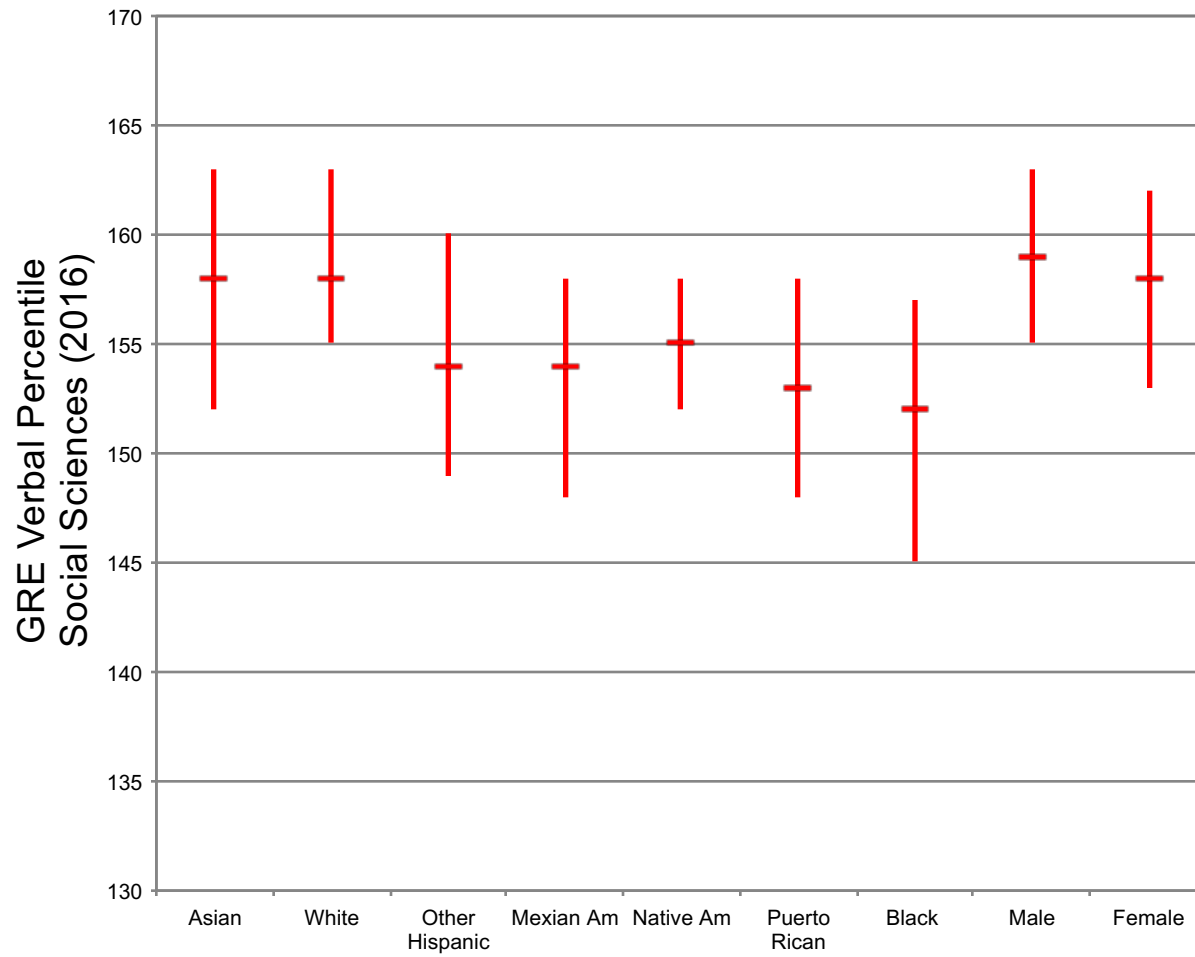


SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"

Social Sciences

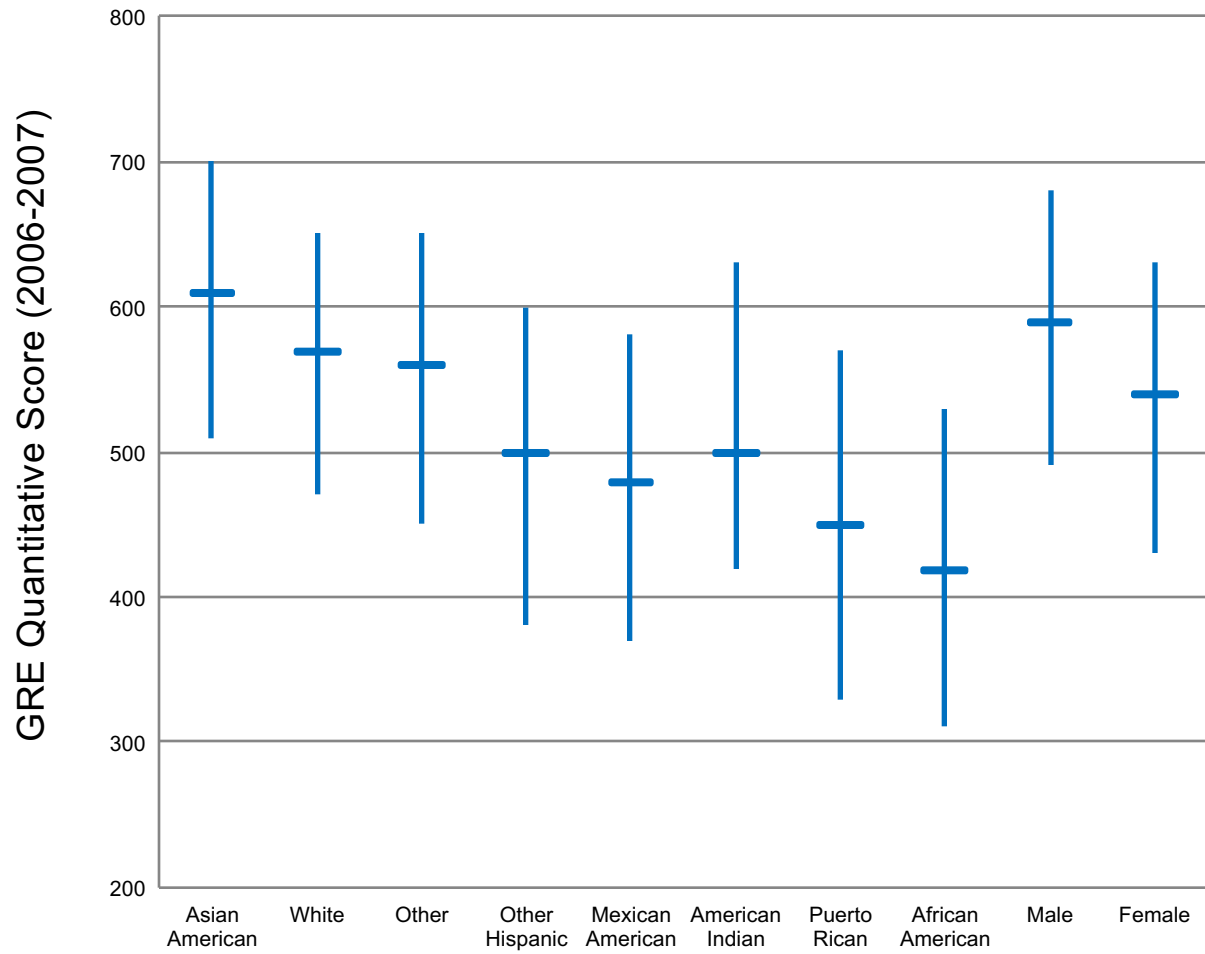


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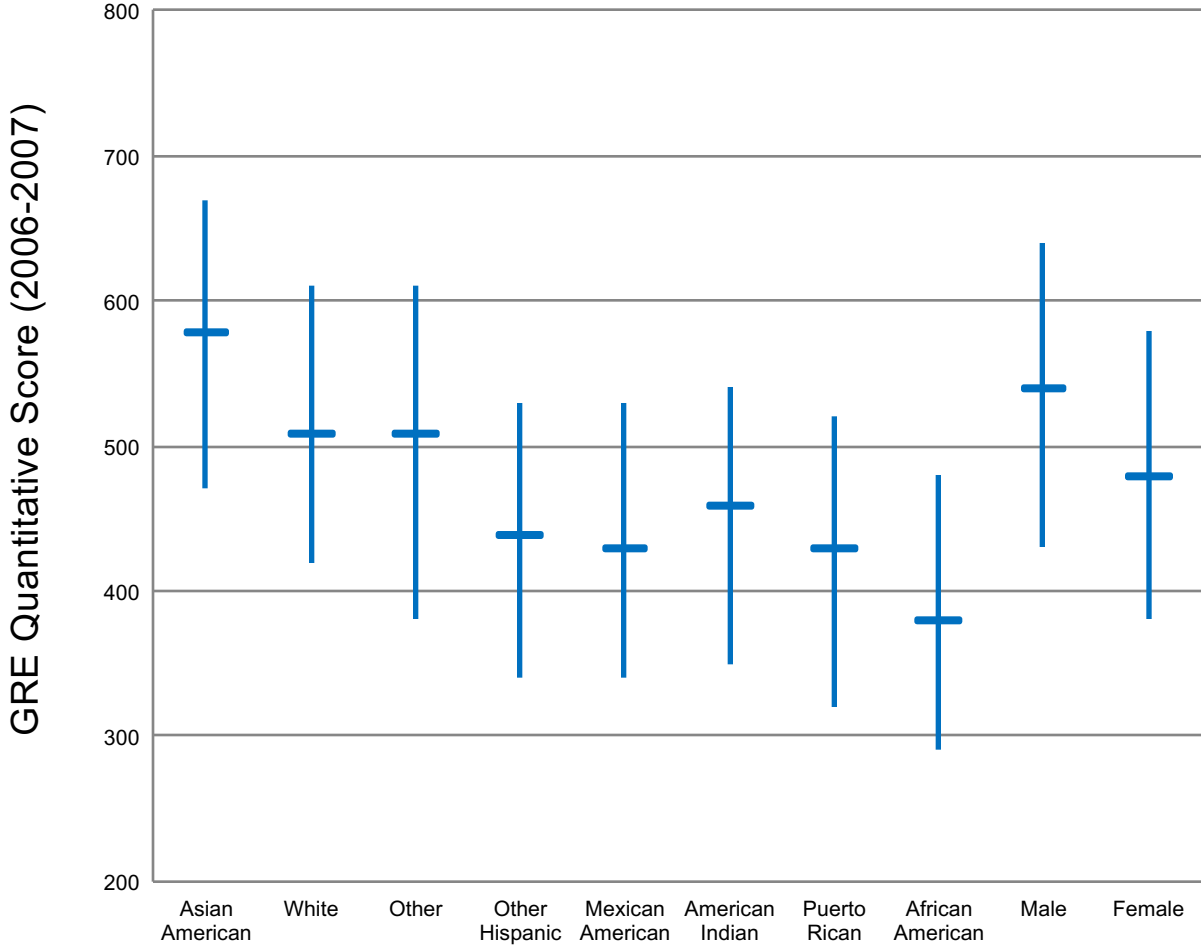
SOURCE: ETS

Humanities and Arts

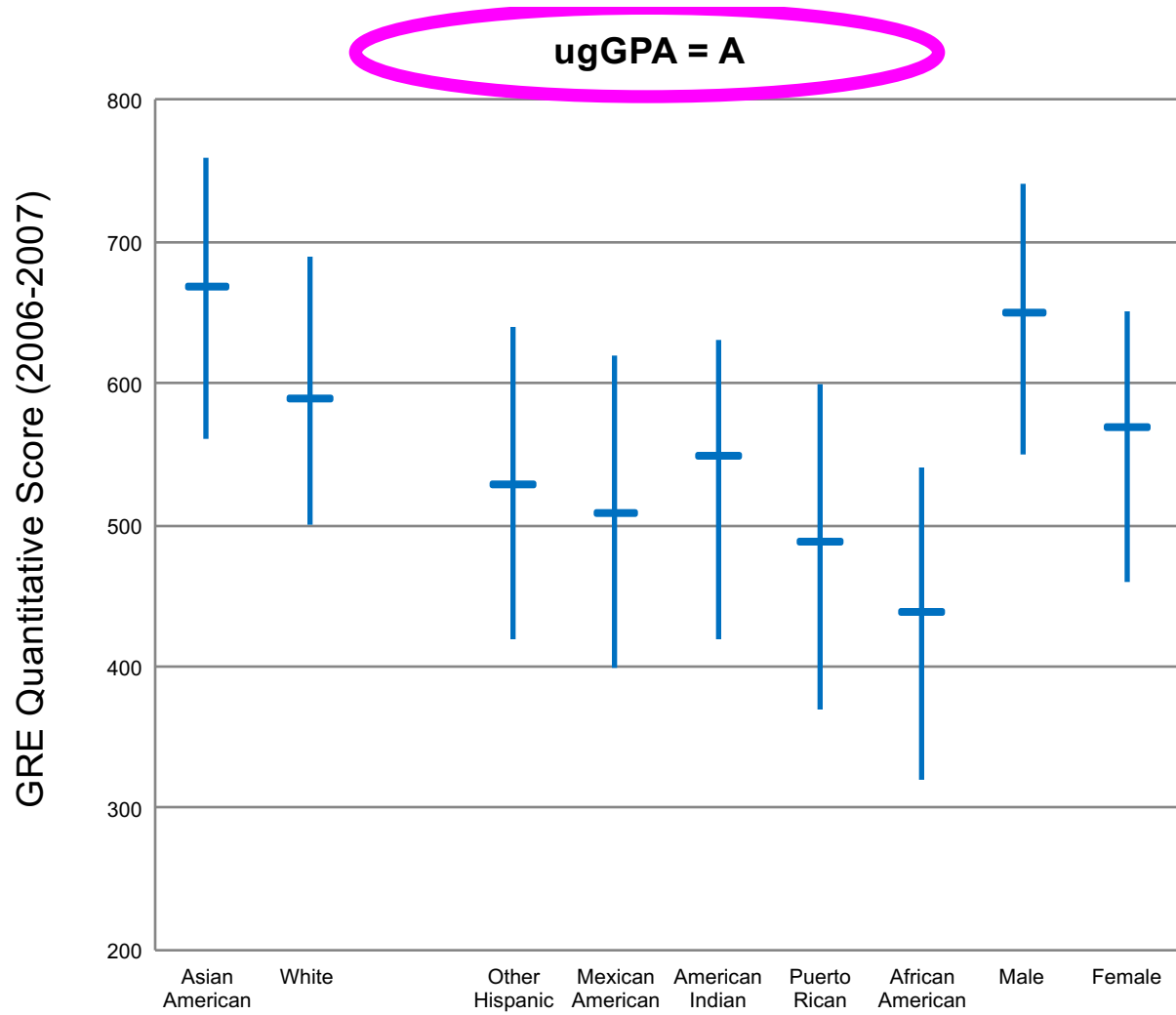


SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"

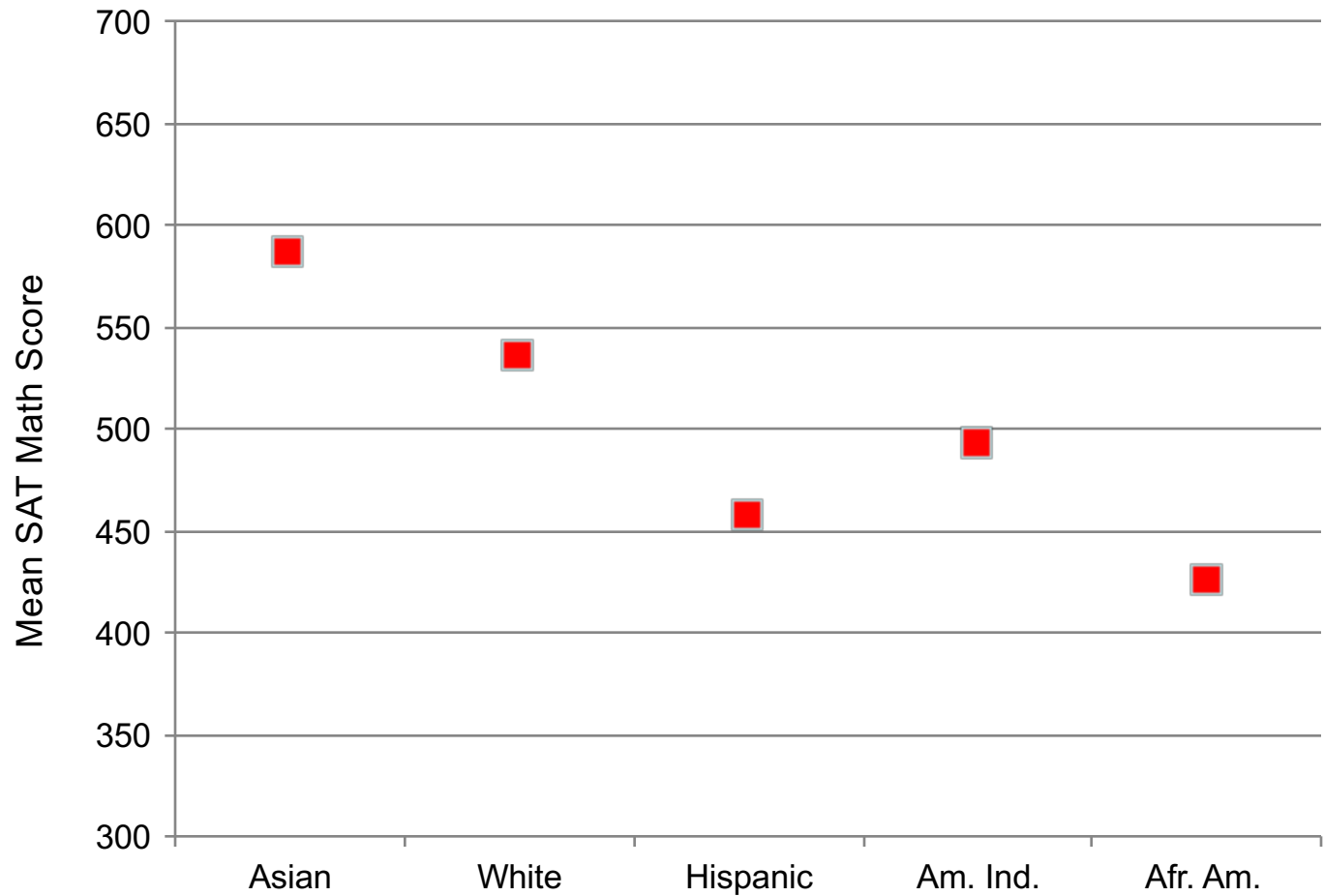
Education



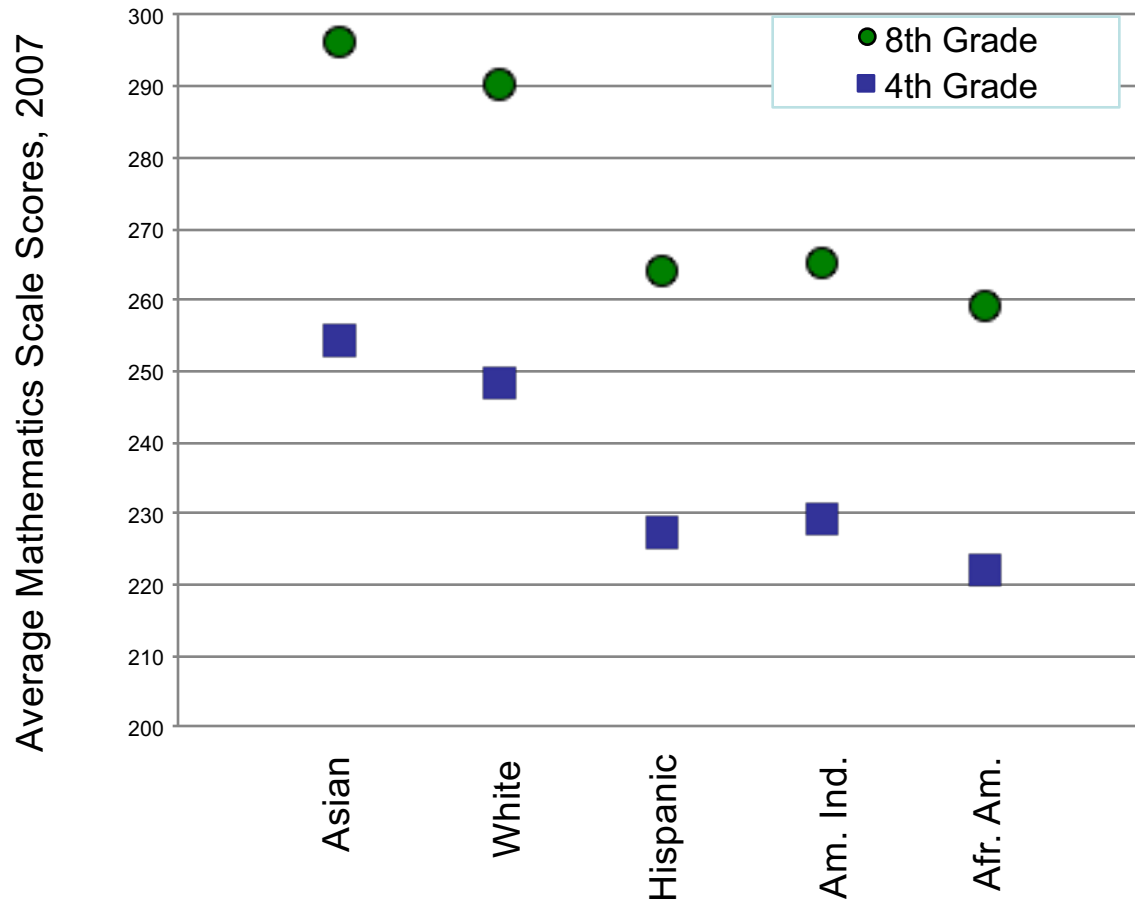
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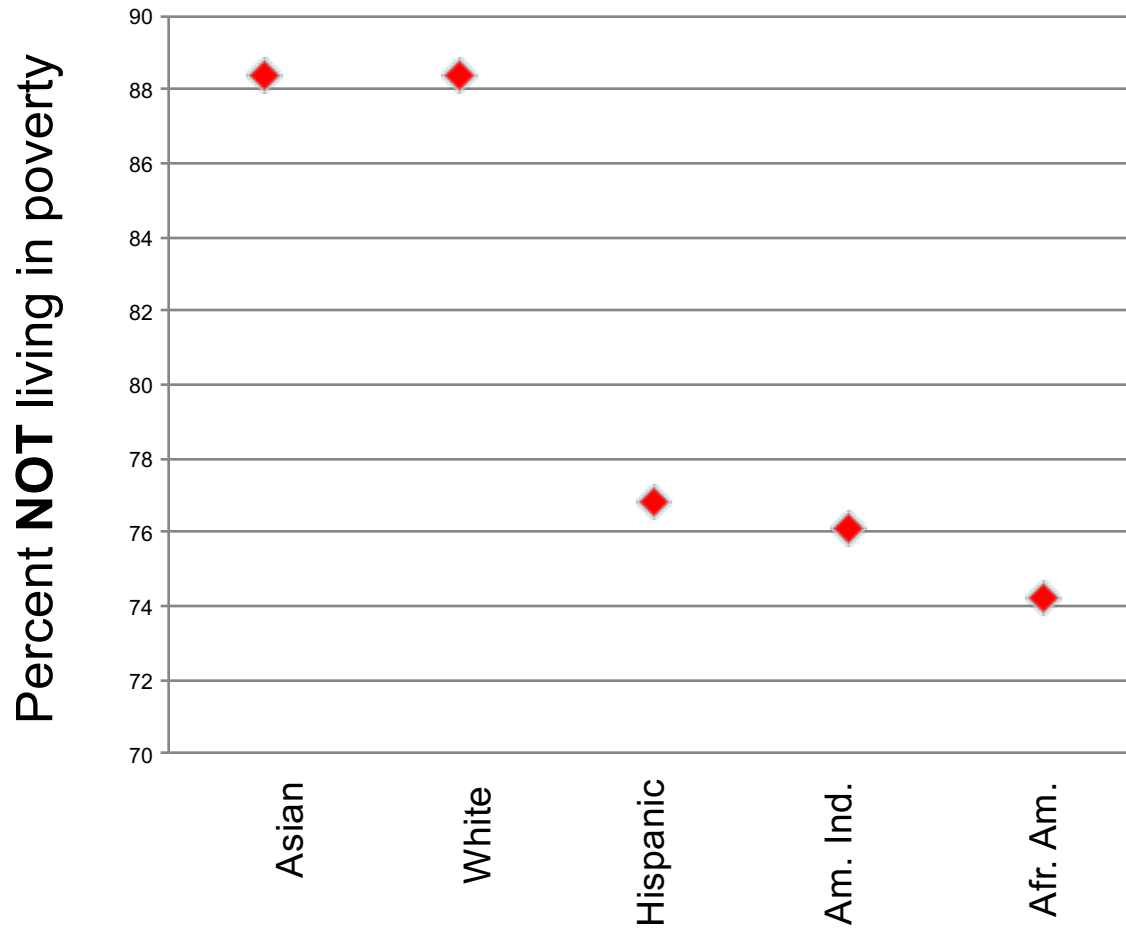
SOURCE: ETS, "Factors that can influence performance on the GRE general test 2006-2007"



SOURCE: Total Group Profile Report, College Board, 2009 College-Bound Seniors.



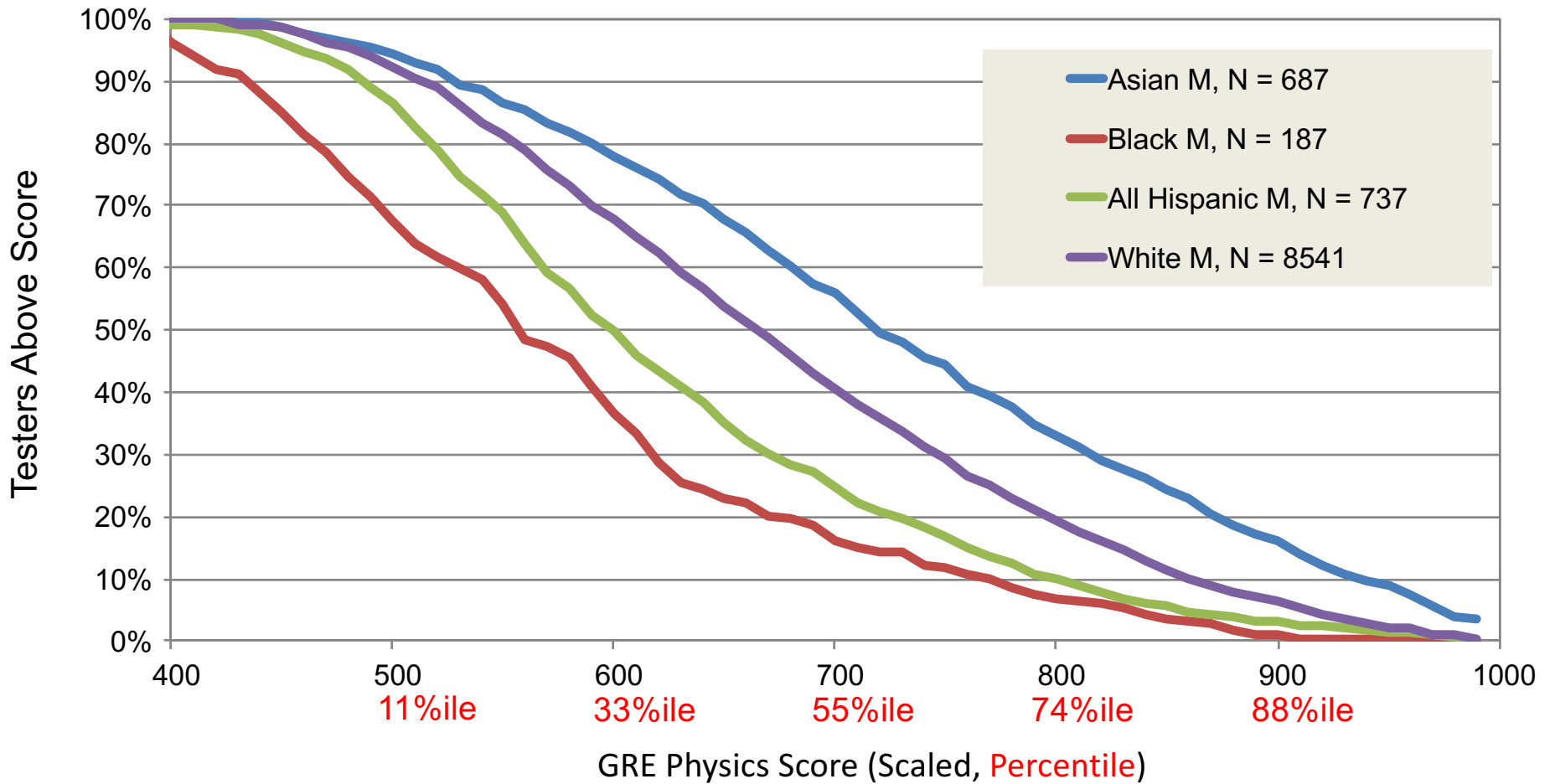
SOURCE: NCES. The Nation's Report Card: Mathematics 2009 (NCES 2010-451), National Center for Education Statistics, U.S. Department of Education.



SOURCE: U.S. Bureau of the Census, Income, Poverty, and Health Insurance Coverage in the United States: 2010, Report P60, n. 238, Table B-2, pp. 68-73.; <http://www.npc.umich.edu/poverty/#4>

GRE Physics Subject Test

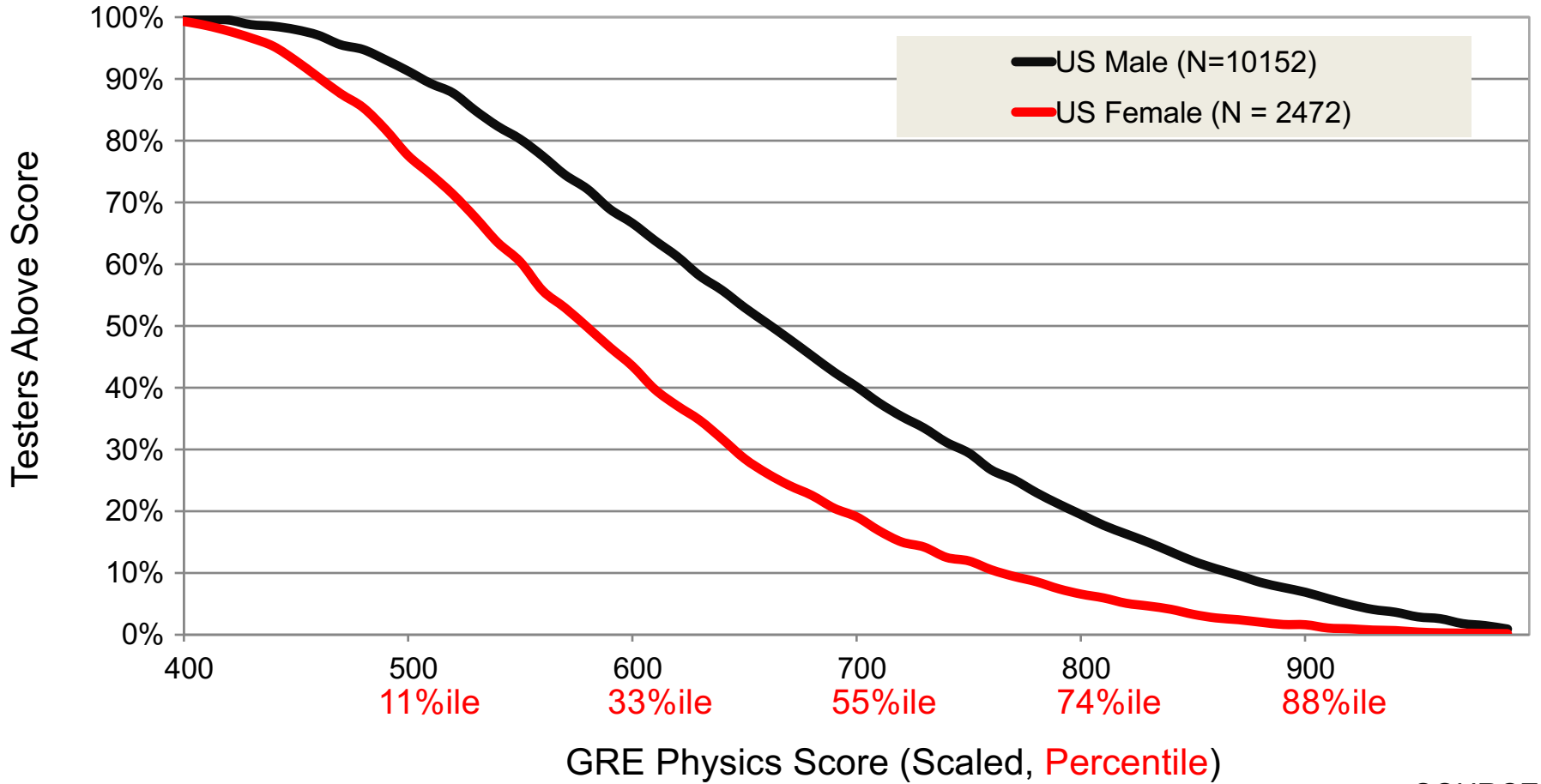
Test Years 6/2011-6/2016; US



SOURCE: ETS

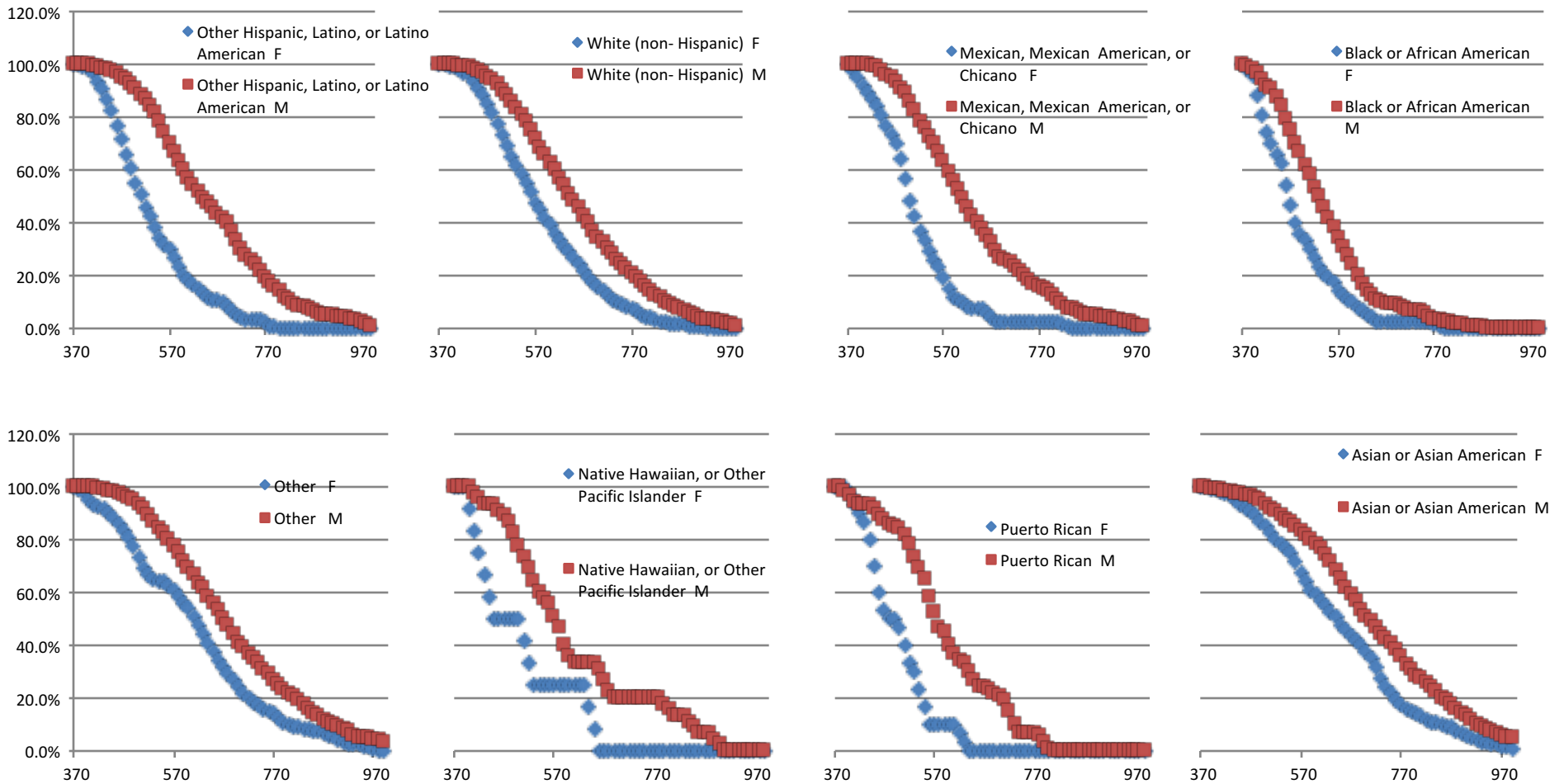
GRE Physics Subject Test

Test Years 6/2011-6/2016; US



SOURCE: ETS

PGRE Gender Gap Persists for all Races and Citizenship



Despite Race/Ethnicity/Gender/SES Issues...

Cut-offs used frequently by admissions committee members.

- Faculty are not trained in selection
- Convenience
 - Sorting spreadsheets is easy
 - Faculty are busy, often reluctantly serving on admissions
- Mindsets
 - Perceived associations with intelligence, belonging, risk
 - “Low scores must tell you something”

What does the literature say about predicting student success?

Meta-analyses come to differing conclusions about the GRE's validity.

Morrison & Morrison, 1995;

Kuncel, et al., 2001;

Kuncel & Hezlett, 2010

Why?

Studies draw upon different methods, different disciplinary and institutional contexts, and different populations.

Only a few correct for attenuation bias;

ETS continues to revise the test.

What do we know?

- Validity of scores varies by exam and by graduate school outcome (Kuncel & Hezlett, 2007).
- The longer the time between the test and the outcome, the weaker the validity.
- Recent validity studies in biomedical sciences & marine sciences find relationships with first year graduate school GPA but not later outcomes (Dore, 2017; Moneta-Koehler, et al., 2017)

How predictive are common admissions items?

Study: solicited data from all Physics PhD programs that produce more than 10 PhDs/yr on average.

25 Programs sent data.

Inputs: uGPA; GRE-Q; GRE-V; GRE-Phys; demographics

Outcomes: gGPA, Final Disposition of Student

Data set represents about 15% of the students that matriculated to Physics PhD programs [2000-2010]

Representative wrt gender and URM status

The usual weight given to GRE scores
exceeds its predictive capabilities
and has negative societal impact.

« [Back to News](#)

An Unlikely Campaign to Move Beyond GRE Scores

| ETS plans to discourage graduate departments from relying in excess on test scores in deciding whom to admit.

By [Scott Jaschik](#) // June 6, 2016

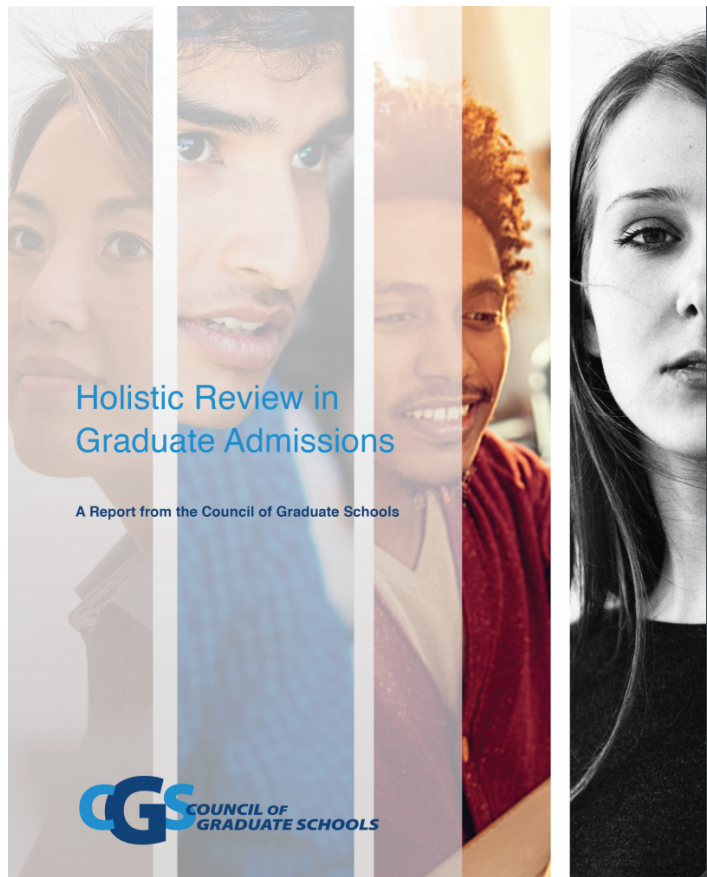
For years, the GRE has faced criticism over its role in the admission of graduate students. [Various studies](#) have suggested that departments rely too heavily on the GRE and as a result end up minimizing the chances that they will admit female, black and Latino applicants. And failing to admit more of such applicants may well doom efforts to diversify the faculties of many colleges.

The logo for GRE (Graduate Record Examinations) is displayed in a bold, blue, sans-serif font. The letters 'GRE' are prominent and slightly shadowed, giving it a three-dimensional appearance.

Now, a new campaign is about to begin to encourage graduate departments to stop focusing as much as they have been on GRE scores. The campaign is going to be led by the Educational Testing Service, which produces the GRE, among other tests.

The alternative: Holistic Review

What is holistic review?



- “...the consideration of a broad range of candidate qualities including ‘noncognitive’ or personal attributes” (Council of Graduate Schools, 2016, p. iii)
- Consideration of context when assessing key criteria. Examples:
 - Grades in context of major & rigor
 - GRE scores in context of known variation by social, national, disciplinary background.
 - Research experience in context of undergraduate institution.

http://cgsnet.org/ckfinder/userfiles/files/CGS_HolisticReview_final_web.pdf

Non-Cognitive Competencies

- Psychological and social attributes we use to navigate life

Self-Awareness

Self-Management

Social Awareness

Relationship Management



Non-Cognitive Competencies

- Psychological and social attributes we use to navigate life
- Measurable!
- Results from decades of Industrial-Organizational Psychology research
 - Predict academic/job performance
 - Show little, if any, group differences
 - Orthogonal to cognitive constructs (GPA, SAT/GRE)



Literature on Non-Cognitive Competencies in Graduate Studies

- [9] P. R. Sackett, N. Schmitt, J. E. Ellingson, and M. B. Kabin 2001, *American Psychologist*, 56, 302
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Victoroff and Boyatzis, J. Dent. Ed **77**, 416 (2013):
Correlating clinical performance with admissions criteria
and **non-cognitive competencies**

	Didactic	Clinical
Cognitive	Yes	No
Non-Cognitive	Maybe	Yes

Self-Management competencies correlate with clinical grade.

1. Achievement Orientation
2. Adaptability
3. Initiative
4. Emotional Self-Control
5. Trustworthiness
6. Conscientiousness
7. Optimism

“Cognitive ability and knowledge are threshold aspects of professional work, necessary but not sufficient for outstanding professional performance.”

Self Management

Optimism: Persistence in pursuing goals despite obstacles and setbacks.

Trustworthiness: Maintaining integrity.

Achievement Orientation: Striving to improve or meet a standard of excellence.

Conscientiousness: Taking responsibility for personal performance.

Adaptability: Flexibility in handling change.

Emotional Self-Control: Keeping disruptive emotions/impulses in check.

Initiative: Readiness to act on opportunities.

Relationship Management

Teamwork and Collaboration: Working with others toward shared goals and creating group synergy in pursuing collective goals.

Communication: Listening openly and sending convincing messages.

Building Bonds: Nurturing instrumental relationships.

Conflict Management: Negotiating and resolving disagreements.

Influence: Wielding effective tactics for persuasion.

Change Catalyst: Initiating or managing change.

Inspirational Leadership: Inspiring and guiding individuals and groups.

Developing Others: Sensing others' development needs, bolstering their abilities.

Self Awareness

Self-Confidence: A strong sense of one's self-worth and capabilities.

Accurate Self-Assessment: Knowing one's strengths and limits.

Emotional Awareness: Recognizing one's emotions and their effects.

Social Awareness

Cultural Awareness: Respecting and relating well to people from varied backgrounds.

Organizational Awareness: Reading a group's emotional currents and power relationships.

Empathy: Sensing others' feelings and perspectives, and taking an active interest in their concerns.

Service Orientation: Anticipating, recognizing, and meeting customers' needs.

Recommended ways to assess non-cognitive competencies in admissions

Applicant self-assessment

- Adapt 360° assessment questions
- Only works if applicant is truthful

Exchange personal statement for several short answer items

- Most feasible of all assessment strategies we have described
- Use in combination with an evaluation rubric

Recommended ways to assess non-cognitive competencies in admissions

Rubrics

- Guides review of statements, letters, interviews
 - Can standardize and expedite the review process
 - Helps reduce implicit bias, combats fatigue and expectations
- Can be tailored to specific constructs or discipline-specific norms
- Can be implemented now



item	subitem	High	Medium	Low
Academic Preparation	Physics Coursework	A- or better in all: CM1&2, EM1&2, QM1&2, SM1	B or better in all: CM1&2, EM1&2, QM1&2, SM1; OR A- or better in CM1, EM1, QM1, SM1	A- or better in EM1 and CM1; B average in advanced courses; any C grades without explanation
	Math Coursework	Real and Complex Analysis, Group Theory with A grades	DiffEq, Linear, and a Math Methods course, all with A grades; or more than this with B-A grades	Bare bones math prep (e.g., up to DiffEq), or low grades regularly on math
	Computational Coursework	one year or more of computational physics or equivalent, with no grade below A-	one computational physics course or equivalent programming with B or better	no formal programming apparent or low grades
	Academic honors and/or recognitions	multiple honors, e.g., Dept/University Honors; Phi Beta Kappa, etc	one academic award/recognition	No academic honors in college documented in the application
Research	variety/duration	two years in research	one year in research; only REUs	nothing more than coursework laboratories
	technical skills	a variety of experiment, theory, and/or computational skills	has developed only one class of skill (exp or theory or comp)	nothing more than coursework laboratories
	dispositions	clear commitment to and enthusiasm for research; AND understands what the process entails	clear commitment to and enthusiasm for research; OR understands what the process entails	not clear if they know what they are getting into with a PhD; seems lukewarm about research
	clarity of interests	student has specific interests, is clear about details, and expresses understanding of the big picture implications	student can state interests but they are general or superficial	student does not have clearly stated interests
Fit with program	research	research interests align with multiple faculty in multiple subfields	research interests align with multiple faculty in one subfield	limited alignment between student interests and faculty expertise
	faculty	someone wants to hire as RA now and/or there is a clear fit with current faculty expertise	someone could supervise, but interests do not directly support a faculty member's work	faculty aligned with applicant's interests are not seeking students
	community	has clearly contributed positively to prior department/school culture, and would do the same for our program	some evidence of participating in service activities	applicant only discusses him/herself; no evidence of engagement in department or university activities
	diversity	applicant has been an active advocate for diversity in physics	belongs to an underrepresented identity group; first generation in college or low SES; and/or contributes to another type of diversity the department seeks	contributions to diversity are unclear from the application
Non-Cognitive Competencies	Achievement Orientation	Consistently strives to improve or meet a high standard of excellence in all areas	Has demonstrated a high standard of excellence in selected areas	No evidence of striving for excellence provided in application or student record
	Conscientiousness	Takes responsibility for personal performance, both the good and the bad; AND demonstrates efficiency and organization	Takes responsibility for personal performance, both the good and the bad; OR demonstrates efficiency and organization	No evidence of taking responsibility for performance AND minimal evidence of efficient, organized work
Full physics example linked here.	Initiative	Consistently seeks out or acts on opportunities AND takes leadership	Consistently seeks out or acts on opportunities AND takes leadership	Has not sought out or taken advantage of opportunities AND does not have a record of leadership
	Teamwork and Collaboration	Successfully worked with others toward shared goals in research and/or extracurriculars	May have a preference for individual work, but application describes prior work with others.	No clear evidence of prior collaborative work
	Perserverence	Application clearly describes successful coping with failures/ obstacles	Basic or perfunctory description of overcoming challenges	Application does not describe experience with failure/obstacles
	Realistic Self Appraisal	Thoughtful & clear assessment of strengths and weaknesses; Evidence of working on self	Basic statements about strengths and weaknesses	One dimensional assessment of abilities (over or understated); little evidence of self-assessment or

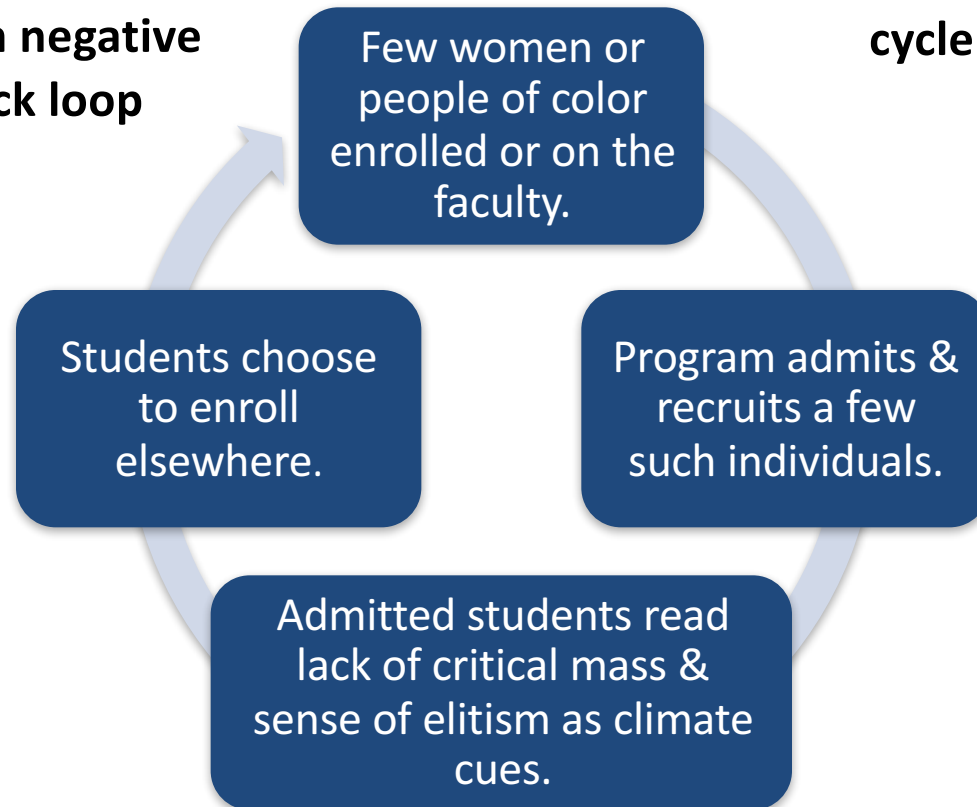
Conclusions

PUT ADMISSIONS IN CONTEXT

- What counts in practice as merit is an institutionalized compromise across the interests of multiple social contexts.
- We need to think systemically when we think about improving admissions.
- Admissions should be one prong in a multidimensional set of efforts

Under a prestige orientation, there is a common negative feedback loop

How and where can we interrupt this cycle?



Let's discuss

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Additional Slides

Logistic regression for predicting PhD completion in physics programs: Limited statistical significance

	US Male (df = 1890)		US Female (df = 379)	
	Logit (SE)	Odds Ratio (SE)	Logit	Odds Ratio
(Intercept)	-2.05** (0.77)	0.1** (0.1)	-4.46** (1.65)	0.01** (0.02)
ug.GPA	0.47* (0.18)	1.6* (0.3)	0.9* (0.4)	2.5* (1)
GRE.Q.	0.01 (0.01)	1 (0.01)	0.02 (0.01)	1.02 (0.01)
GRE.V.	-5x10 ⁻⁶ (0.003)	1 (0.003)	0 (0.01)	1.0 (0.01)
GRE.P.	0.005 (0.003)	1 (0.003)	0 (0.01)	1.0 (0.01)
NRC: 21-55	0.63*** (0.15)	1.9*** (0.3)	0.15 (0.3)	1.2 (0.4)
NRC: 1-20	0.74*** (0.15)	2.1*** (0.3)	0.9** (0.34)	2.5** (0.8)

NOTES ON INTERPRETATION:

- Odds Ratio (OR)= e^b ; SE= Standard Error
- $OR > 1.0$ or < 1.0 = Increased or decreased risk of the outcome compared to reference group;
- OR are multiplicative, so $OR = 2.0$ is 2x the odds of the outcome.
- Asterisks: *= $p < 0.05$; **= $p < 0.01$; ***= $p < 0.001$
- Reference group NRC Rank ≥ 56

Example:

For US females, each additional point on the GPA scale for college grades is associated with a 2.5 times greater odds of completing the PhD, all else in the model held equal.