Nos. 20-1199 & 21-707

IN THE

Supreme Court of the United States

STUDENTS FOR FAIR ADMISSIONS, INC.,
Petitioner,
v.
PRESIDENT AND FELLOWS OF HARVARD COLLEGE,
Respondent.

STUDENTS FOR FAIR ADMISSIONS, INC.,
Petitioner,
v.
UNIVERSITY OF NORTH CAROLINA, ET AL.,
Respondent.

On Writs of Certiorari to the United States Courts of Appeals for the First and Fourth Circuits

BRIEF OF EMPIRICAL SCHOLARS AS *AMICI CURIAE* IN SUPPORT OF RESPONDENTS

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INTEREST OF *AMICI CURIAE* [1]

Amici curiae are leaders in the field of quantitative social science and statistical methodology. Amici submit this brief to point out the substantial methodological flaws in the "mismatch" research discussed in the Brief for Richard Sander as *Amicus Curiae* in Support of Petitioner. Professor Sander's mismatch hypothesis is unsupported and based on work that fails to adhere to basic tenets of research design.

Amici curiae are **Ian Ayres** (Professor at Yale Law School and at Yale School of Management); **Richard A. Berk** (Emeritus Professor of Criminology and Statistics at the University of Pennsylvania); **Richard R.W. Brooks** (Professor of Law at New York University); **Daniel E. Ho** (Professor of Law at Stanford Law School and Professor of Political Science); **Gary King** (University Professor at Harvard University); **Kevin Quinn** (Professor of Political Science at the University of Michigan); **Donald B. Rubin** (Professor of Statistics Emeritus at Harvard University); and **Sherod Thaxton** (Professor of Law at UCLA School of Law).[2]

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[1] The parties have consented to the filing of this brief. Pursuant to Supreme Court Rule 37.6, *amici curiae* state that no counsel for a party authored any part of the brief, and no person or entity other than *amici curiae* and their counsel made a monetary contribution to the preparation or submission of this brief.

[2] Academic affiliations are listed for identification purposes only. Additional information regarding *amici curiae* is at Appendix A.

SUMMARY OF ARGUMENT

This Court has correctly held that race-conscious admissions programs can be a permissible means for ensuring that the nation's future "leaders [are] trained through wide exposure to the ideas and mores of students as diverse as this Nation of many peoples." *Regents of University of California v. Bakke*, 438 U.S. 265, 313 (1978) (Powell, J.). For more than four decades, the Court has consistently upheld the university practice of conducting a holistic evaluation of each applicant that acknowledges her race, just as it acknowledges the multitude of other experiences and characteristics that make her who she is. *See, e.g., Grutter v. Bollinger,* 539 U.S. 306 (2003); *Fisher v. Univ. of Texas at Austin*, 579 U.S. 365, 381 (2016).

Amicus curiae Richard Sander urges the Court to overturn those precedents, arguing that race-conscious admissions do not help, but rather harm, students from underrepresented racial groups. Sander bases this claim on the so-called "mismatch" hypothesis—the notion that when Black, Hispanic, and other students from underrepresented racial groups are given a race-based preference or "boost" in the admissions process, they attend colleges and universities where they are "academically mismatched" and, as a result, do less well in the long run than they would have if they had attended less selective schools.

Sander asserts that the evidence for "mismatch" is "clear" and "continues to mount."[3] That is incorrect. Since Sander published his first paper on "mismatch" in 2004, that research has been subjected to wide-ranging criticism. As several critiques discuss in detail, Sander's research has major methodological flaws—misapplying basic principles of causal inference—that call into doubt his controversial conclusions about affirmative action. Sander's "mismatch" research—and its provocative claim that, on average, racially underrepresented students admitted through affirmative action would be better off attending less selective colleges and universities—fails to meet the basic tenets of rigorous social science research. The more recent work of other researchers that Sander relies on in his *amicus* brief do not support the mismatch hypothesis either.

In short, Sander's research has "significantly overestimated the costs of affirmative action and failed to demonstrate benefits from ending it."[4] The Court should give no weight to the bad social science behind the "mismatch" hypothesis.

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[3] Brief for Richard Sander as *Amicus Curiae* in Support of Petitioner at 24, 27, Nos. 20-1199 & 21-707 (May 9, 2022) (hereinafter, "Sander Br.").

[4] David L. Chambers, Timothy T. Clydesdale, William C. Kidder & Richard O. Lempert, *The Real Impact of Affirmative Action in American Law Schools: An Empirical Critique of Richard Sander's Study*, 57 STAN. L. REV. 1855, 1857 (2005).

ARGUMENT

A. An Overview of the "Mismatch" Hypothesis

The 1960s saw increasing efforts to end longstanding discrimination in education, as well as fierce resistance to those efforts. It also saw some of the first iterations of the idea that race-conscious admissions policies in higher education led to a "mismatch" that disadvantaged non-White students.[5] Richard Sander is a leading proponent of the "mismatch" hypothesis, which he first discussed in a controversial 2004 Stanford Law Review article.[6] In that article and later work, Sander has made the provocative claim that race-conscious admissions programs intended to foster diversity actually harm, rather than help, racially underrepresented students.

Sander has argued that when Black, Hispanic, and other students from underrepresented racial groups (collectively, URGs) are advantaged in the admissions process, they often enter college or graduate school with below-median grades and test scores. In those circumstances, Sander argues, the student is

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[5] *See* Ian Ayres, Richard Brooks & Zachary Shelley, *Affirmative Action* Still *Hasn't Been Shown to Reduce the Number of Black Lawyers: A Response to Sander*, 69 INT'L REV. OF L. & ECON. 1 (2022) (citing 1968 and 1972 discussions of "mismatch" in peer reviewed study); Richard Sander, *Replication of Mismatch Research: Ayres, Brooks and Ho*, 58 INT'L REV. L. ECON. 75, 76 (2019) (stating that the mismatch "idea was initially advanced by sociologists in the 1960s").

[6] Richard H. Sander, *A Systematic Analysis of Affirmative Action in American Law Schools*, 57 Stan. L. Rev. 367 (2004).

"academically mismatched," and will not grasp the material as readily as her peers, causing her to fall behind. The hypothesis posits that the student ultimately will learn less than she would have in a less rigorous academic environment—the kind of environment that she presumably would have been in but for a race-conscious boost in the admissions process.[7]

Proponents of the mismatch hypothesis argue that race-conscious admissions policies make it more likely that minority students will fail the bar exam ("law school mismatch"), opt out of a science, technology, engineering and math (STEM) major they otherwise would have chosen ("science mismatch"), or decide not to pursue graduate-school education ("academic mismatch").

Ultimately, the mismatch hypothesis holds that race-based admission preferences do minority students more harm than good. Hence, by curtailing affirmative action, minorities would end up at less rigorous schools ostensibly better "matched" to their skill sets.

Mismatch is a hypothesis about cause and effect. Proponents claim that law school mismatch, for example, has *caused* Black students to learn less in law school, fail the bar at higher rates, and fare worse in employment outcomes. And, most controversially, Sander contends that race-conscious admissions policies have *decreased* the total number of Black

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[7] *See* Richard H. Sander & Stuart Taylor, Jr., MISMATCH: HOW AFFIRMATIVE ACTION HURTS STUDENTS IT'S INTENDED TO HELP, AND WHY UNIVERSITIES WON'T ADMIT IT 4 (2012).

lawyers.[8] As amici will explain, the data does not support those broad causal claims.

B. The "Mismatch" Hypothesis Is Strongly Disputed

One could read Sander's *amicus* brief and be left with the impression that "mismatch" is an established, recognized phenomenon. That would be wrong. In fact, Sander's work has been widely criticized for its serious methodological flaws.[9]

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[8] Sander (2004), *supra* note 6, at 372, 473.

[9] *See, e.g.,* Ayres, Brooks & Shelley, *supra* note 5, at 11 ("[W]e find ourselves ... hesitant and doubtful about the empirical identification of mismatch given the limits of the data and methodological approaches, in contrast to Sander's zealous confidence."); Sherod Thaxton, *How Not to Lie About Affirmative Action*, 67 UCLA L. REV. 834, 841 (2020) ("[T]he data from which Sander's conclusions are derived are incapable of providing confirmation or disconfirmation of mismatch effects, and simply show that Sander's conclusions concerning mismatch effects are unreliable and highly dependent on his modeling assumptions."); Gregory Camilli et al., *The Mismatch Hypotheses in Law School Admissions*, 2 WIDENER J.L. ECON. & RACE 165, 207 (2011) ("[T]his study has shown that regression analyses of the kind conducted by Sander are incapable of producing credible estimates of causal effects."); Chambers et al., *supra* note 4, at 1857 ("The conclusions in *Systemic Analysis* rest on a series of statistical errors, oversights, and implausible assumptions."); Ian Ayres & Richard Brooks, *Does Affirmative Action Reduce the Number of Black Lawyers?*, 57 STAN. L. REV. 1807, 1809 (2005) ("[E]ven within [Sander's] framework, there is not persuasive evidence indicating that affirmative action is responsible for lowering the number of black attorneys."); Michele Landis Dauber, *The Big Muddy*, 57 STAN L. REV. 1899, 1902 (2005) (describing *Systemic Analysis* as

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The hallmark of reliable empirical work is that it can be validated by other researchers. Many social scientists have studied the impact of elite educational institutions on student outcomes, and have found, among other things, that attending a more selective school is associated with higher graduation rates and higher earnings for URG students—conclusions directly contrary to mismatch.[10]

"a flawed and ultimately misleading contribution."); Cheryl I. Harris & William C. Kidder, *The Black Student Mismatch Myth in Legal Education: The Systemic Flaws in Richard Sander's Affirmative Action Study*, 46 J. BLACKS HIGHER EDUC. 102, 103 (2005) ("Regrettably, Sander significantly underestimates the harms of ending affirmative action, and seriously overestimates the benefits of ending affirmative action. Even his own data do not support the mismatch hypothesis."); Daniel E. Ho, *Why Affirmative Action Does Not Cause Black Students to Fail the Bar*, 114 YALE L.J. 1997, 1997 (2005) ("[T]he [Sander] study draws internally inconsistent and empirically invalid conclusions about the effects of affirmative action. Correcting the assumptions and testing the hypothesis directly shows that for similarly qualified black students, attending a higher-tier law school has no detectable effect on bar passage rates."); Angela Onwuachi-Willig & Amber Fricke, *Class, Classes, and Classic Race-Baiting: What's in a Definition?*, 88 DENV. U.L. REV. 807, 834 (2011) ("[W]e perceive numerous defects in Sander's methodology that raise serious questions about the results in his article Class in American Legal Education.").

[10] *See, e.g.,* Ayres, Brooks & Shelley, *supra* note 5, at 3 ("When implemented and interpreted correctly, many of Sander's results run counter to the claim that their 'results add significantly to the body of research finding support for the law school mismatch hypothesis.'"); Sigal Alon & Marta Tienda, *Assessing the "Mismatch" Hypothesis: Differences in College Graduation Rates by Institutional Selectivity*, 78 SOC. EDUC. 294, 309 (2005)

(footnote continued on next page)

("Minority students' likelihood of graduation increases as the selectivity of the institution attended rises."); William G. Bowen & Derek Bok, THE SHAPE OF THE RIVER: LONG-TERM CONSEQUENCES OF CONSIDERING RACE IN COLLEGE AND UNIVERSITY ADMISSIONS 259 (2000) ("[T]he more selective the college attended, the lower the black dropout rate."); William G. Bowen et al., CROSSING THE FINISH LINE: COMPLETING COLLEGE AT AMERICA'S PUBLIC UNIVERSITIES 210 (2011) ("There is certainly no evidence that black men were 'harmed' by going to the more selective universities that chose to admit them. In fact, the evidence available strongly suggests that students in general, including black students, are generally well advised to enroll at the most challenging university that will accept them."); Kalena E. Cortes, *Do Bans on Affirmative Action Hurt Minority Students? Evidence from the Texas 10% Plan*, 29 ECON. EDUC. REV. 1110, 1122 (2010) ("[R]esults from the analysis run counter to the 'mismatch' hypothesis, which would have predicted both higher retention and college graduation rates for these lower-ranked minority students because they are now supposedly being better 'matched' to an institution under the Top 10% Plan."); Mary J. Fischer & Douglas S. Massey, *The Effects of Affirmative Action in Higher Education*, 36 SOC. SCI. RSCH. 531, 544 (2007) ("If anything[,] minority students who benefited from affirmative action earned higher grades and left school at lower rates than others, and they expressed neither greater nor less satisfaction with college life in general."); Thomas J. Kane, *Racial and Ethnic Preferences in College Admissions*, 59 OHIO ST. L.J. 971, 991 (1998) ("[E]ven if a student's characteristics are held constant, attendance at a more selective institution is associated with higher earnings and higher college completion rates for minority students as well as White and other non-Hispanic students."); Mark C. Long, *College Quality and Early Adult Outcomes*, 27 ECON. EDUC. REV. 588, 589 (2008) ("[C]ollege quality does appear to have positive significant effects on most of the outcomes studied[.]"); Tatiana Melguizo, *Quality Matters: Assessing the Impact of Attending More Selective Institutions on College Completion Rates of Minorities*, 49 RSCH. HIGHER EDUC. 214, 232

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It would be a serious mischaracterization of the evidence to suggest that mismatch hypothesis is a consensus view among social scientists. The data do not support key claims made by mismatch proponents, and their arguments are not based on reliable scientific principles. *Cf.* Fed. R. Evid. 702; *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 589 (1993). In short, the Court should give the mismatch research no weight.

C. The "Mismatch" Hypothesis Is Not Supported by Rigorous Research

The mismatch hypothesis is premised on data that Sander and a handful of others claim demonstrate that affirmative action policies cause negative outcomes for URG students. But the available data does not support such a cause-and-effect claim. There are many weaknesses in Sander's methodologies, and commentators have argued that his conclusions are tainted by a penchant for making "indefensibly strong assumptions," "overclaiming results," and

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(2008) ("[M]inorities benefit from attending the most elite institutions."); Jesse Rothstein & Albert Yoon, *Affirmative Action in Law School Admissions: What Do Racial Preferences Do?*, 75 U. CHI. L. REV. 649, 707 (2008) ("Even overstating mismatch effects and understating the importance of preferences to enrollment, the effects of eliminating mismatch are dwarfed by the first-order effect of eliminating preferences: the reduction in the number of black students admitted."); Mario L. Small & Christopher Winship, *Black Students' Graduation from Elite Colleges: Institutional Characteristics and Between-Institution Differences*, 36 SOC. SCI. RSCH. 1257, 1257 (2007) ("[S]electivity improves black probabilities of graduation[.]").

"misinterpreting other results that in fact cut against his claims."[11]

1. Research Principles for Causal Inference

A causal effect is the difference between two "potential outcomes." For example, a law student may have one potential career trajectory if she attended a higher-tier law school and a different potential career trajectory if she attended a lower-tier law school. The difference between these two potential outcomes is the causal effect of law school tier on that student.

The "fundamental problem of causal inference" is that researchers never observe both potential outcomes.[12] The effort to infer causation always involves comparing the observed data (*e.g.*, the student's actual performance at a higher-tier law school) with an estimated *counterfactual* outcome (*e.g.*, how the student would have fared had she attended a lower-tier law school).

An experiment could address this problem by comparing students who have similar pre-existing characteristics (*e.g.*, ability), but are randomly assigned to different tier schools. Because the two experimental groups would differ only in the tier of

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[11] Ayres, Brooks & Shelley, *supra* note 5, at 1; *cf.* Sander Br. at 24 (conceding that "it is difficult for scholars to obtain access to the sort of data that would allow careful analysis of the effects of affirmative action policies.").

[12] *See* Paul W. Holland, *Statistics and Causal Inference (with Discussion)*, 81 J. AM. STAT. ASS'N 945, 947 (1986); *see also* Donald B. Rubin, *Bayesian Inference for Causal Effects: The Role of Randomization*, 6 ANNALS STAT. 34, 38 (1978).

school attended, differences in the outcomes for the two groups would provide a valid estimate of the causal effect of law school tier.[13] Actually conducting such an experiment is, of course, infeasible when dealing with real-world educational choices. When analyzing data in which students have not been randomly assigned, the ability to make a valid causal inference—that is, to say why a student experienced one outcome rather than another counterfactual outcome—requires rigorous scientific grounding. A necessary condition to establishing a causal relationship is that one can reasonably rule out all other reasons that the treatment and control groups systematically differ with respect to an outcome besides the influence of the treatment. Thus, to draw a valid causal inference, researchers should generate (a) comparison groups that are (b) as similar as possible in pre-existing characteristics so that (c) differences in outcomes can be attributed to the selectivity of the institution.[14]

In each of these ways, and in other respects, the "mismatch" hypothesis falls short.

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[13] *See generally* Guido W. Imbens & Donald B. Rubin, CAUSAL INFERENCE IN STATISTICS AND SOCIAL SCIENCES (2015); Donald B. Rubin, *For Objective Causal Inference, Design Trumps Analysis*, 2 ANNALS APPLIED STAT. 808 (2008); Donald B. Rubin, *The Design Versus the Analysis of Observational Studies for Causal Effects: Parallels with the Design of Randomized Trials*, 26 STAT. MED. 20 (2007); Donald B. Rubin, *Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies*, 66 J. EDUC. PSYCHOL. 688 (1974).

[14] *See* Imbens & Rubin, *supra* note 13, at ch. 15.

2. The "Mismatch" Research Has Serious Methodological Flaws

Sander's original work on the mismatch hypothesis was based on a regression analysis that predicted whether a student who graduated from law school will pass the bar based on several variables: undergraduate GPA, LSAT score, gender, race, law school tier, and law school GPA.[15] From that, Sander concluded that race-conscious law school admissions policies cause Black law students to learn less, fail the bar at higher rates, and have poorer employment outcomes, thereby decreasing the total number of Black lawyers.[16]

No matter how "impressive-sounding" Sander's arguments in this and later work may appear, they "violate basic methodological principles and are incorrect."[17] That is, "Sander's arguments fail on their methodology, their logic, and their real-world application."[18]

a. "Mismatch" Lacks Causal Support

The overarching weakness of the mismatch research is that the limited data does not support the cause-and-effect conclusions that the theory's

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[15] *See* Sander (2004), *supra* note 6, at 444–45.

[16] *See id.* at 478–80.

[17] Daniel E. Ho, *Affirmative Action's Affirmative Actions: A Reply to Sander*, 114 YALE L.J. 2011, 2011 (2005).

[18] Beverly I. Moran, *The Case for Black Inferiority? What Must Be True If Professor Sander Is Right: A Response to a Systemic Analysis of Affirmative Action in American Law Schools*, 5 CONN. PUB. INT. L.J. 41, 58 (2005).

proponents assert. Sander's methodologically suspect analysis, even when accepting his framework as valid, does not show that racial preferences used by law schools *cause* lower bar passage rates among students who benefit from those preferences.[19] Sander sidesteps his causation flaws and nonetheless argues for the mismatch explanation because, in his view, no other expert has offered a better alternative explanation.[20] But data can be—and in this case is—insufficient to support a robust causal inference.

Causal mismatch claims fail to appropriately account for the multitude of potential influences that could impact the outcomes being measured. "It is exceedingly difficult to identify the mechanisms through which these influences operate and practically impossible to predict their effects."[21]

To be sure, affirmative action policies are not the only operative factor impacting law school performance, bar passage, and ultimate success in the legal profession. To illustrate the challenges presented here, consider a simpler scenario offered by Ian Ayres, Richard Brooks, and Zachary Shelley in which a professional tennis player and an amateur are matched up against each other. While the skill levels between the amateur and professional are "mismatched," it is unclear how each will perform compared to their baseline against competitors of the similar ability, or

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[19] *See, e.g.*, Ayres & Brooks, *supra* note 9, at 1809.

[20] *See* Sander Br. at 28.

[21] Ayres, Brooks & Shelley, *supra* note 5, at 5.

how the mismatch will affect each player's performance.[22]

For example, the amateur may outperform their baseline, rising to the challenge of facing a professional. Alternatively, the amateur may perform at their typical skill level, or they might succumb to nerves and perform worse than usual. Similarly, the professional could land their shots perfectly, or they might lose focus and drop points that they would have finished off against another pro. The most likely outcome among these scenarios is not clear and is likely to vary across individuals.[23]

It may be that grades and test scores have some measure of predictive power. In the same way that it is likely that the professional would win the tennis match against the amateur, a student with incoming credentials substantially below the mean may be likely to perform less well than their peers in tasks predictably correlated with those incoming credentials.[24] But the predictive correlation does not amount to a causal inference, so the inquiry cannot stop there.

The mismatch hypothesis does not appropriately account for how unobserved differences between students may affect their bar performances. This, in turn, invalidates Sander's causation analysis.

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[22] *Id.* at 5–6.

[23] *Id.* at 6.

[24] *Id.*

b. Bar Passage Data Is Unreliable Evidence of "Mismatch"

The three core relationships measured in Sander's law school mismatch analysis are: "(1) aptitude for legal training, (2) school selectivity/competitiveness, and (3) acquired legal knowledge/reasoning skills".[25] Sander uses LSAT score and undergraduate GPA as proxies for aptitude. School selectivity is based on a six-tier framework gleaned from bar passage success ("BPS") data. Sander uses BPS data from the early 1990s as a proxy for acquired legal knowledge. However, analysis of BPS data does not provide a consistent account of mismatch's effects and does not provide evidence that academic mismatch decreases the number of Black lawyers.[26]

For example, in certain analyses, only those Black students with the weakest academic credentials show the negative affects attributed to mismatch, but moderately qualified students are not affected by the "mismatch" effect, even while attending the most

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[25] Thaxton, *supra* note 9, at 851.

[26] Ayres, Brooks & Shelley, *supra* note 5, at 10; *see also, e.g.,* William C. Kidder & Richard O. Lempert, *The Mismatch Myth in American Higher Education: A Synthesis of Empirical Evidence at the Law School and Undergraduate Levels*, Michigan Law, Public Law and Legal Theory Research Paper Series, Paper No. 404 at 17–18 (May 2014) ("If Williams and Sander have stirred up the pond, it has only been to muddy the waters, but other research shows the pond is not in fact muddy. Either, academic mismatch poses no problems, or the problems it poses are so slight, or affect such a small proportion of affirmative action admittees or are so counterbalanced by positive effects that mismatch has no relevance to debates over affirmative action.").

selective schools.[27] In many analytical models, the data regressions show that attending a second choice (*i.e.*, less selective or competitive) school is correlated with positive outcomes for all students, but even better outcomes for White students than for Black students.[28] In other models, the regressions show that attending a second-choice school again appears to be correlated with positive outcomes for all students, but with Black students appearing better off than White students.[29] "And in the regressions most important for assessing the relationship between attending a second-choice law school and becoming a lawyer, there does not appear to be a statistically significant relationship for any group of students."[30]

As such, "a problematic conclusion one could draw from Sander's results is that *everyone* is harmed by going to a more elite law school. . . . [I]f there are cross-race differences in mismatch effects, generalizing these estimates to a sample of African American students could yield misleading conclusions about the extent of mismatch."[31] Taken together, there is no clear and consistent takeaway from the regressions of BPS, and the results cannot be said to support Sander's mismatch hypothesis.

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[27] Rothstein & Yoon, *supra* note 10, at 652.

[28] Ayres, Brooks & Shelley, *supra* note 5, at 10.

[29] *Id.*

[30] *Id.*

[31] Peter Arcidiacono & Michael Lovenheim, *Affirmative Action and the Quality-Fit Tradeoff*, 54 J. ECON. LITERATURE 3, 17 (2015).

"Often 'event[s] exist[] in a long chain of causation, and most events have multiple causes. The further back in time we go, the more causes that must be held constant."[32] Based on Sander's own explanatory framework, his assumption that nothing that affects both law school GPA and first-time bar passage is affected by law school tier "is unlikely to hold because of the temporal distance between what is learned in school (proxied by [law school GPA]) and when a student takes the bar exam."[33]

By comparing bar passage rates for URG students to their admissions credentials without considering other intervening factors—and approximately 200 additional variables that Sander did not consider were available in the BPS data[34]—the mismatch hypothesis

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[32] Thaxton, *supra* note 9, at 854 (quoting Joseph S. Nye, Jr., UNDERSTANDING INTERNATIONAL CONFLICTS: AN INTRODUCTION TO THEORY AND HISTORY 51 (4th ed. 2003)).

[33] *See id.* (also noting the conceptual flaws in Sander's explanation that mismatch only influences first-time bar passage, but not eventual bar passage); *see also* Ho, *Why Affirmative Action Does Not Cause Black Students to Fail the Bar*, *supra* note 9, at 1997 ("[T]he [Sander] study draws internally inconsistent and empirically invalid conclusions about the effects of affirmative action. Correcting the assumptions and testing the hypothesis directly shows that for similarly qualified Black students, attending a higher-tier law school has no detectable effect on bar passage rates.").

[34] *See* Thaxton, *supra* note 9, at 887–889 (discussing Daniel E. Ho, *Evaluating Affirmative Action in American Law Schools: Does Attending a Better Law School Cause Black Students to Fail the Bar?*, at 8 (Mar. 9,

(footnote continued on next page)

provides exaggerated conclusions about the effects of affirmative action on URG students.[35]

Sander has acknowledged the "many uncertainties built into any prediction about how a change to race-blind admissions would change the production of Black lawyers."[36] However, Sander's BPS analyses do not resolve those uncertainties. "Torturing the data will not assure reliable confessions; they are too limited to say anything conclusive."[37]

2005), https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.409.5849&rep=rep1&type=pdf).

[35] Sander's critics have often identified other explanations that are on stronger conceptual and evidentiary footing than Sander's mismatch theory. *See, e.g.*, Chambers et al., *supra* note 4, at 1885–86 (discussing stereotype threat, financial circumstances, and the scarcity of Black faculty as important determinants of academic and early professional success among Black graduates); Kidder & Lempert, supra note 26, at 3 ("[M]ost of the social science research, including the best designed studies . . . finds no consistent support for the mismatch hypothesis and, occasionally yields evidence consistent with reverse mismatch effects."); David B. Wilkins, *A Systematic Response to Systemic Disadvantage: A Response to Sander*, 57 STAN. L. REV. 1915, 1919 (2005) (summarizing research on the persistence of racial discrimination in the legal field and arguing that "[a]ffirmative action has played a crucial role in helping black lawyers to overcome the systematic and persistent obstacles" and its benefits far outweigh its potential risks).

[36] Sander (2004), *supra* note 6, at 477.

[37] Ayres, Brooks & Shelley, *supra* note 5, at 11.

c. "Mismatch" Is Premised on Invalid Comparisons

No broad inferences about the effects of affirmative action can be gleaned from Sander's analysis because he uses invalid comparisons, in at least two distinct respects. First, all the schools reflected in the 1990s bar passage data upon which Sander relies employ some form of affirmative action. Because there is no comparison group of schools that do not practice affirmative action, no causal inference can be established about the impacts of affirmative action.[38]

Second, the primary comparison that Sander employs is that of Black and White students.[39] In doing so, Sander assumes that in the absence of affirmative action, Black students at selective institutions would have fared similarly to White students at less-selective institutions. For example, to estimate how a Black student at an Ivy League school would have performed at a lower-tier school, Sander would look to a White student at a public state school.

This is a hallmark example of comparing apples to oranges. The well-established tenets of research design require that a study hold constant preexisting

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[38] The extent of preferential admissions may, of course, vary by school, and capitalizing on these differences may provide one approach to assess different types of implementations of affirmative action programs.

[39] *See* Richard H. Sander, *Mismeasuring the Mismatch: A Response to Ho*, 114 YALE L.J. 2005, 2006 (2005) ("The entire [Sander Stanford Law Review] paper is organized around a comparison of 'treatment' blacks ... and 'control' whites[.]").

attributes such as race.[40] By treating Black students at higher-tiered schools as equivalent to White students at lower-tiered schools, Sander violates these basic principles.

d. Sander Grounds Mismatch's Causal Inference on Improper Assumptions

The credibility of a causal inference depends significantly on the credibility of the underlying assumptions. There are important, yet unobserved, differences baked into the mismatch analysis that invalidate the estimated effects of affirmative action.[41]

The critical assumption of the mismatch hypothesis is that holding constant the pre-existing factors of undergraduate GPA scores, LSAT scores, race, and gender, there are no other systematic differences between students who attend different law school tiers. If that assumption is reliable, one can attribute observed differences to the difference in law school tiers. But if the assumption is not reliable, no causation can be inferred. If, for example, Ivy League law students are more disposed to taking the bar in a jurisdiction with a tougher exam, such as California or New York, that critical assumption is violated. Consequently, the researcher would draw an

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[40] *See* Imbens & Rubin, *supra* note 13, at ch. 12.

[41] Without proper research design, causal-effect estimates are biased, and conventional tests for statistical significance (and confidence intervals) do not address that bias. Put differently, the fact that a result is "statistically significant" does not overcome the first-order issues of research design that amici highlight.

inappropriate inference about the effect of law school tier.

Research that applies these principles has not found any substantially and statistically significant effects on bar passage.[42]

e. "Mismatch" Methodology Is Entrenched with Bias That Negatively Impacts Causal Inference

Sander's analysis is plagued by six types of bias: (1) posttreatment bias, (2) nonresponse bias, (3) omitted variable bias, (4) interpolation bias, (5) extrapolation bias, and (6) measurement error bias.[43] Each of these biases may significantly impair the causation analysis by undermining the ability to compare cases that are equivalent along all relevant dimensions. As a result, data may be interpreted as showing misleading relationships between the key explanatory variable and the outcome.

First, posttreatment bias can exist in two forms: controlling for a mediating variable (such as law school

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[42] *See* Ho, *Why Affirmative Action Does Not Cause Black Students to Fail the Bar, supra* note 9, at 2002–04. Correcting for the ungrounded assumptions in Sander's research design, there is simply no evidence of the harms of mismatch suggested by Sander. *See* Chambers et al., *supra* note 3, at 1857 ("The conclusions in *Systemic Analysis* rest on a series of statistical errors, oversights, and implausible assumptions."); Dauber, *supra* note 4, at 1902 ("Unfortunately, Sander has muddied rather than clarified the waters with a flawed and ultimately misleading contribution."); Harris & Kidder, *supra* note 9, at 103.

[43] *See* Thaxton, *supra* note 9, at 847.

GPA), and analyzing a nonrandom subset of students (such as law graduates rather than matriculants) when analyzing bar passage.[44] "Sander's analyses have suffered from both types of problems, and his attempts to address these biases are statistically indefensible and fail to remove (or even significantly ameliorate) the bias."[45]

Second, Sander discarded all information from respondents if a value from any one variable was missing (*i.e.*, the data reflected a "nonresponse"), resulting in systematically missing data.[46] At best, this nonresponse bias will merely make the estimates less precise. But, at worst, these estimates will lead to unrepresentative inferences, undermining the ability to draw reliable conclusions from the data.[47]

Third, several of the biases imbedded in Sander's mismatch work can be reconceptualized as omitted variable bias. Although it is hard to be certain that there are no relevant variables omitted from an analysis, it is advisable to consider as many pretreatment variables as possible to achieve balance between the treatment and control groups.[48] There are

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[44] *See id.* at 984–85.

[45] *See* Thaxton, *supra* note 9, at 984. A proper analysis of mismatch in the BPS data would employ widely available methods that appropriately address both types of bias, which Sander fails to do.

[46] *See id.* at 985.

[47] *Id.*

[48] *Id.*

nearly 200 additional variables in the BPS data that Sander failed to consider.

Fourth, interpolation bias will result if a model incorrectly postulates how the variables are related to the outcome.[49] Sander does not evaluate the sensitivity of his conclusions to the parametric assumptions that he adopts about the relationships between variables with values in the range of observed data, which directly implicates this type of bias.[50]

Fifth, the examination of mismatch effects must be based on information that actually exists (or could exist) in the range of observed data to avoid extrapolation bias.[51] "'What if' questions based on hypothetical comparisons that cannot be located within the observed range are not empirically supported counterfactuals—they are 'extreme counterfactuals' that cannot be answered with the available data."[52] Researchers have developed "preprocessing" techniques to ensure that proposed questions can be reasonably answered with the available data and thereby avoid extrapolation bias.[53] Sander, however, continues to avoid incorporating these approaches into

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[49] *Id.* at 858.

[50] *Id.* at 987.

[51] *Id.*

[52] *Id.* at 987.

[53] *Id.*

his work, which impacts the credibility of his findings.[54]

Sixth, measurement error bias exists when the association between variables is distorted as a result of the process by which the data are measured. The key variables examined by Sander are all inherently error-prone measures.[55] Sander has expressly acknowledged the problems that have been identified with using law school GPA as an indicator of legal learning, but he downplays the implications of this line of research in assessing the causes and consequences of racial disparities in law school and bar exam performance.[56]

As previously noted, commentators have noted Sander's tendency to selectively identify findings from the research literature that merely appear to support mismatch, ignore or mischaracterize unsupportive findings, rely on several contradictory assumptions, overstate implications, and understate caveats. This, in itself, is a seventh form of bias—confirmation bias. This cognitive bias leads individuals to misinterpret new information as supporting previously held hypotheses, and induces a degree of overconfidence such that the individual may come to believe with near

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[54] *Id.* at 987 (referencing Sander (2019), *supra* note 5); *see also* Ho, *Evaluating Affirmative Action*, *supra* note 34, at 4 (highlighting extrapolation bias in Sander's analyses of mismatch).

[55] *Id.* at 688.

[56] *Id.*

certainty in a false hypothesis despite receiving contrary information.[57]

3. The Research Cited in Sander's Amicus Brief Does Not Reliably Support His Arguments

In his *amicus* brief, Sander directs the Court to four settings where he claims "mismatch" is evident: undergraduate social interactions, undergraduate science programs, law school, and medical school.[58] The cited studies cannot reliably support Sander's broad claims.

a. The Cited Peer-Group Studies Are Not Evidence of "Mismatch"

Sander cites two studies that he claims show a "clear 'social mismatch' effect" that "pulled students apart rather than fostering close interracial exchange and understanding."[59] Neither study can support this sweeping claim.

One study paired incoming "low ability students" at the Air Force Academy with incoming "high ability students," and found that doing so did not improve low ability students' academic performance.[60] The study—

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[57] *See* Thaxton, *supra* note 9, at 994 (citing Matthew Rabin & Joel L. Schrag, *First Impressions Matter: A Model of Confirmatory Bias*, 114 Q. J. ECON. 37, 59–62 (1999)).

[58] Sander Br. at 24–30.

[59] *Id.* at 24, 25.

[60] Scott E. Carrell, Bruce I. Sacerdote & James E. West, *From Natural Variation to Optimal Policy? The Importance of Endogenous Peer Group Formation*, 81 ECONOMETRICA 855 (2013).

which did not divide cadets by race—does not support Sander's assertion that "large performance differences . . . pulled students apart rather than fostering close interracial exchange and understanding."[61]

The study authors themselves and subsequent scholars have noted the limitations of the experiment. First, the group housing assignments likely led to the inadvertent homogenous grouping of "low ability students" with other "low ability students" and vice versa.[62] Second, students in the control groups were randomly housed according to an algorithm that "provides an even distribution of students by demographic characteristics," thereby placing students in intentionally diverse squadrons.[63] Contrary to the researchers' pre-study expectations, "low ability students" performed better in these heterogenous squadrons, suggesting that academic diversity may, if anything, benefit lower ability students[64] Third, one

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[61] Sander Br. at 25.

[62] Richard O. Lempert, *Mismatch and Science Desistance: Failed Arguments Against Affirmative Action*, 64 UCLA L. REV. DISCOURSE 136, 149–150 (2016); Carrell, Sacerdote & West, *supra* note 60, at 876.

[63] Carrell, Sacerdote & West, *supra* note 60, at 862; *see also id.* at 876 ("[R]andomization creates a good mixing of all student types and abilities into a squadron, and this mixing can limit the degree to which student *i* will form a study (friendship) group that is homogeneous in terms of race, gender, or academic ability.").

[64] *Id.* at 874, 881 (observing that "the presence of middle ability students [may be] a crucial part of generating positive peer effects for the lower ability students" and concluding "that social

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scholar notes that the study's conclusion is of relativity little practical significance, measuring a small difference in GPA (2.20 versus 2.26) between the low ability study and control groups.[65] There is thus no "clear 'social mismatch' effect" due to affirmative action policies as Sander suggests.[66]

A study at Duke University found that academic background may play a role in the development of interracial friendships and that Black students who had lower incoming academic credentials maintained the lowest levels of interracial friendships.[67] But the limited study cannot support the weight that Sander would put on it for at least two reasons: (1) the sampling was prohibitively limited, comparing just the race of students' five closest friends in high school and their ten closest friends in college, and (2) other interracial social interactions in the classroom, clubs, or other social settings were clearly fostered by a diverse collegiate environment but not considered in

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processes are so rich and complex that one needs a deep understanding of their formation before one can formulate 'optimal policy'").

[65] Lempert (2016), *supra* note 62, at 150.

[66] *Id.* ("The[] results [of Carrell,. Sacerdote & West] tell us little about the implications of affirmative action or mismatch in the real world.").

[67] Peter Arcidiacono et. al., *Racial Segregation Patterns in Selective Universities*, 56 J.L. & ECON. 1039, 1058–59 (2013).

the study.[68] By focusing on close friendships instead of large groups, the authors did not account for other evidence suggesting that Black students who enter schools with smaller Black populations experience greater feelings of racial isolation and group together as a result.[69] The authors recognized the limitations of

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[68] *See* Vinay Harpalani, *Narrowly Tailored but Broadly Compelling: Defending Race-Conscious Admissions After* Fisher, 45 SETON HALL L. REV. 761, 831 n.306 (2015) ("The authors acknowledge that 'while the rather small number of reported friends ... may reflect ... a student's closest friends, it by no means provides a comprehensive measure of the degree of social interaction among students within or across racial groups.' This is an important limitation, as the educational benefits of diversity do not necessitate formation of close friendships, but rather cross-racial interactions for the purpose of breaking down racial stereotypes and learning about people of different racial and cultural backgrounds." (quoting Arcidiacono et. al., *supra* note 67, at 1059)).

[69] *See* William C. Kidder, *The Salience of Racial Isolation: African Americans' and Latinos' Perceptions of Climate and Enrollment Choices with and without Proposition 209*, REPORT OF THE CIVIL RIGHTS PROJECT AT UCLA, at 13 (Oct. 2012), http://civilrightsproject.ucla.edu/research/college-access/affirmative-action/the-salience-of-racial-isolation-african-americans2019-and-latinos2019-perceptions-of-climate-and-enrollment-choices-with-and-without-proposition-209/Kidder_Racial-Isolation_CRP_final_Oct2012-w-table.pdf ("[H]igher levels of racial diversity are generally better for the campus climate faced by African American students, whereas racial isolation in combination with an affirmative action ban is associated with a more inhospitable racial climate."); *see also* Elise Boddie, *Critical Mass and the Paradox of Colorblind Individualism in Equal Protection*, 17 U. PA. J. CONST. L. 781, 801 (2015) (where there are few African American students on a

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their study,[70] and Sander's reliance on it here is not well founded.

b. Other Factors Account for Gap in STEM Persistence Between White and Minority Groups.

So-called "science mismatch" is the notion that URG students are disproportionately likely to drop out of STEM fields as a result of admissions preferences that leave them overwhelmed in challenging STEM courses. But contrary to Sander's assertion, this effect is by no means "clear."[71]

A study by Smyth and McArdle, on which Sander relies, found that White and Asian college freshman who intended to major in science were, respectively, 1.8 and 2.6 times more likely to graduate with such a degree than URG students with the same interest at

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campus, "[t]heir small numbers ... make[] cross-racial interactions awkward and uncomfortable and, therefore, infrequent ... lead[ing] to even greater social distance between whites and blacks on campus")." Sander also cites to Peter Arcidiacono, Shakeep Khan & Jacob Vigdor, *Representation versus Assimilation: How Do Preferences in College Admissions Affect Social Interactions?*, 95 J. PUB. ECON. 1, 39 (2011), in which the authors find that race-conscious admissions have "a very small impact on the population rate of inter-racial contact." This study, too, does not consider the role of social isolation.

[70] *See supra* note 68.

[71] *See generally* Lempert (2016), *supra* note 62, at 154.

orientation.[72] The study concluded that admission of URG students with relative lack of pre-college preparation (as measured by grades and SAT scores) at elite schools caused them to be less likely to graduate with a STEM major.[73]

But Smyth and McArdle analyze graduation rates in STEM fields in a vacuum, failing to account for the positive effect that affirmative action has on graduation rates as a whole. For example, they hypothesize that higher graduation rates for URG students in elite schools should translate to higher graduation rates in STEM degrees for URG students at these institutions.[74] Failing to find this true, they conclude that the cause must be affirmative action and that the lower STEM graduation rate negatively impacts URG students, despite data clearly showing that URG students attending elite schools are more likely to graduate overall.[75]

Amanda L. Griffith, a professor of economics at Wake Forest, also studied the persistence of undergraduate women and minorities in the science fields, noting that institutions with a greater proportion of undergraduate students relative to

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[72] *See* Frederick L. Smyth & John J. McArdle, *Ethnic and Gender Differences in Science Graduation at Selective Colleges with Implications for Admission Policy and College Choice*, 45 RESEARCH IN HIGHER EDUCATION 353, 368 (2004).

[73] *Id.* at 368.

[74] *Id.* at 371.

[75] *Id.* at 372–76.

graduate students retain more URG students in STEM, indicating that institutions that focus on undergraduate education are more likely to have higher levels of persistence by URG students in STEM fields.[76] Further, Richard Lempert of the University of Michigan School of Law similarly points out that URG students may not be aware of the rigorous coursework required to persist in science majors and thus enter the field less prepared or less committed to pursue those majors.[77] Smyth and McArdle did not consider either of these factors.

Lempert also observed that the implications of the "science mismatch" discussion are paternalistic. Forcing URG students to attend lower ranking schools by abolishing affirmative action, and thereby encouraging them to pursue STEM degrees at those schools, harms more URG students than the small number of URG students who would ostensibly "benefit" (at least in terms of persistence in the STEM fields).[78]

c. Sander's Claims of Law School "Mismatch" Have Been Widely Refuted.

Sander's assertion that lower bar passage rates for URG students as compared to White students "could

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[76] Amanda L. Griffith, *Persistence of Women and Minorities in STEM Field Majors: Is It the School That Matters?*, 29 ECON. EDUC. REV. 911, 912 (2010).

[77] Lempert (2016), *supra* note 62, at 153.

[78] *Id.* at 166.

only be explained by a large mismatch effect"[79] has been substantively and widely disputed, as demonstrated in Sections B and C(2).

The additional work Sander cites in his *amicus* brief fails in many of the same ways. In his self-cited work, Sander erroneously concludes that because Black students with the lowest law school GPA have the lowest law school graduation rates and those students struggle with bar passage, there is evidence that affirmative action negatively affects Black law students.[80] This is incorrect. In fact, Donald Rubin, one of the nation's experts in causal inference, and co-author Alice Xiang found that "the data and our simulations contradict the predictions of the mismatch hypothesis" when analyzing the same dataset prepared by Sander.[81] They concluded that "incoming student characteristics are more important in shaping academic outcomes than the tier boosts conferred by affirmative action."[82] And, without affirmative action, fewer Black students would be admitted to top law schools without a significant difference in academic student outcomes.[83]

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[79] Sander Br. at 27.

[80] Sander Br. at 27–29.

[81] *See generally* Alice Xiang & Donald B. Rubin, *Assessing the Potential Impact of a Nationwide Class-Based Affirmative Action System*, 30 STAT. SCI. 297, 308 (2015).

[82] *Id.* at 308.

[83] *Id.*

Sander's recent work with Robert Steinbuch, does not move the needle because it suffers from several conceptual problems, including those previously identified by critics.[84]

Sander also cites a study analyzing the various trade-offs in affirmative action programs in undergraduate and law schools to support his mismatch hypothesis.[85] But, what Sander fails to include is the authors' critique of Sander's own work, finding that his "estimates likely overstate the amount of mismatch" because "Sander is assuming that there are no other factors (such as unobserved ability) that would drive the differences in bar passage rates within each LSAT bin."[86]

d. The Evidence Does Not Demonstrate Medical School "Mismatch"

Physicians Robert C. Davidson and Ernest L. Lewis studied medical school, postgraduate training, and career experiences of students admitted by special consideration admissions programs over a twenty-year period. They found that these students had lower

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[84] *See* Sherod Thaxton, *When Old Habits Die Hard: A Comment on Sander and Steinbuch's "Mismatch and Bar Passage"* (Mar. 16, 2022) (discussing six methodological flaws), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4058858.

[85] Sander Br. at 28 (citing Arcidiacono & Lovenheim, *supra* note 31, at 11).

[86] Arcidiacono & Lovenheim, *supra* note 31, at 17; *see also id.* at 46 (noting that "shifting minorities out of law schools altogether could lead to worse labor market outcomes among these students than had they been admitted to some law school").

grades in the first two years of medical school, but by the third year, the special consideration and regular consideration students "began to merge in their achievements in class work and test scores."[87] And, by the time these students reached residency, "both populations [were] equally likely to receive honors evaluations" with "no detectible difference in academic difficulty in their residency training program."[88] In sum, there was "a convergence of academic progress between the special consideration admission physicians and their regular admissions colleagues as their training lengthen[ed]."[89]

This study is contrary to the core causal claim of the mismatch hypothesis—that race-conscious admissions cause "overmatched" minority students to have worse outcomes over time—and instead shows that students who entered medical school with lower academic scores were able to "catch-up" over time and were indistinguishable from their regular admissions peers once established in their careers.

Sander's weak claim that the lower percentage of Black physicians than Black medical school matriculants is "at least consistent with" the view that attrition "is largely due to large medical school

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[87] Robert C. Davidson & Ernest L. Lewis, *Affirmative Action and Other Special Consideration Admissions at the University of California Davis School of Medicine*, 278 JAMA 1153, 1158 (1997).

[88] *Id.*

[89] *Id.*

admissions preferences" is unsubstantiated.[90] Here again, mere correlation does not imply causation. Without robust evidence of causation, these data points do not show medical school mismatch, and evidence in the Davidson and Lewis study is contrary.

CONCLUSION

In light of the many methodological flaws in the underlying research and the large body of contrary scholarship, *amici curiae* respectfully suggest that the Court give no weight to the "mismatch" hypothesis.

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[90] Sander Br. at 30.

APPENDIX A

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Richard A. Berk is an Emeritus Professor of Criminology and Statistics with past appointments in the Department of Criminology and the Department of Statistics and Data Science at the University of Pennsylvania. He is also an Emeritus Distinguished Professor of Statistics at UCLA, where he was a founding member of the Department of Statistics. Professor Berk has served as Vice Chair of the Social Science Research Council, on the National Research Council's Committee on Applied and Theoretical Statistics, as a visiting faculty member in the Statistics Group at the Los Alamos National Laboratories, and as Visiting Chair in Environmental Science, Department of Earth, Atmosphere and Oceans, Ecole Normale Supérieure, Paris, France. He is an elected Fellow of the American Association for the Advancement of Science and the American Statistical Association. He works on various topics in applied statistics including causal inference, statistical/machine learning, fairness in artificial intelligence, and post-model-selection inference.

Richard R.W. Brooks is the Emilie M. Bullowa Professor of Law at New York University. He joined the law faculty at NYU in 2018, after holding the Leighton Homer Surbeck Professorship of Law at Yale Law School followed by the Charles Keller Beekman Professorship of Law at Columbia Law School. Brooks' scholarly approach combines economics, game theory and legal analytical methods from private law fields—such as contract, property, fiduciary and corporate law—to study social organization more broadly. An exemplar of this approach is found in SAVING THE NEIGHBORHOOD: RACIALLY RESTRICTIVE COVENANTS, LAW, AND SOCIAL NORMS (2013) (with Carol M. Rose).

Daniel E. Ho is the William Benjamin Scott and Luna M. Scott Professor of Law at Stanford Law School, Professor of Political Science, Senior Fellow at the Stanford Institute for Economic Policy Research, Associate Director of the Stanford Institute for Human-Centered Artificial Intelligence, Faculty Fellow at the Center for Advanced Study in the Behavioral Sciences, and Director of the Regulation, Evaluation, and Governance Lab (RegLab) at Stanford University. His scholarship centers on quantitative empirical legal studies, with a substantive focus on administrative law and regulatory policy, antidiscrimination law, and courts. Ho served as president for the Society of Empirical Legal Studies and his work has received numerous prizes, including the Warren Miller prize for the best paper published in Political Analysis, the Carole Hafner Award for the best paper at the International Conference on Artificial Intelligence and Law, and the Innovative Gold Practice Award from the National Association of County and City Health

Officials. Ho serves as an appointee to the National Artificial Intelligence Advisory Commission (NAIAC) and as a Public Member of the Administrative Conference of the United States (ACUS)

Gary King is the Albert J. Weatherhead III University Professor at Harvard University—one of 25 with Harvard's most distinguished faculty title—and Director of the Institute for Quantitative Social Science. Professor King develops and applies empirical methods in many areas of social science, focusing on innovations that span the range from statistical theory to practical application. He is an elected Fellow in eight honorary societies (National Academy of Sciences, American Statistical Association, American Association for the Advancement of Science, American Academy of Arts and Sciences, Society for Political Methodology, National Academy of Social Insurance, American Academy of Political and Social Science, and the Guggenheim Foundation) and has won more than 55 prizes and awards for his work. Professor King was elected President of the Society for Political Methodology and Vice President of the American Political Science Association. He has been a member of the Senior Editorial Board at Science, Visiting Fellow at Oxford, and Senior Science Adviser to the World Health Organization. He has written more than 185 journal articles, twenty open-source software packages, and eight books.

Kevin Quinn is a professor of Political Science at the University of Michigan. Prior to joining the Michigan faculty, Professor Quinn was a Professor of Law at UC Berkeley. His research focuses on questions of empirical legal studies and statistical methodology.

Professor Quinn is a three-time winner of the Gosnell Prize for excellence in political methodology, and his research has been supported by the National Science Foundation, in addition to appearing in leading journals in political science, statistics, and law. Professor Quinn is also a former President of the Society for Political Methodology.

Donald B. Rubin is currently Professor in the Yau Center for Mathematical Sciences, Tsinghua University; Murray Schusterman Senior Research Fellow, Fox Business School, Temple University; and Professor of Statistics Emeritus, Harvard University. He is an elected Fellow (or Member/Honorary Member) of: the Woodrow Wilson Society, Guggenheim Memorial Foundation, Alexander von Humboldt Foundation, American Statistical Association, Institute of Mathematical Statistics, International Statistical Institute, American Association for the Advancement of Science, American Academy of Arts and Sciences, European Association of Methodology, the British Academy, and the U.S. National Academy of Sciences. As of 2022, he has authored/coauthored nearly 500 publications (including ten books), has four joint patents, and for many years has been one of the most highly cited authors in the world, with currently approximately 350,000 citations, and over 20,000 per year in recent years (Google Scholar). Of his many publications with over 1,000 citations each, sixteen of them are solely authored by Professor Rubin. He has received honorary doctorate degrees from Otto Friedrich University, Bamberg, Germany; the University of Ljubljana, Slovenia; Universidad Santo Tomás, Bogotá, Colombia; Uppsala University,

Sweden; and Northwestern University, Evanston, Illinois. He has also received honorary professorships from the University of Utrecht, The Netherlands; Shanghai Finance University, China; Nanjing University of Science & Technology, China; Xi'an University of Technology, China; and University of the Free State, Republic of South Africa. He is a widely sought international lecturer and consultant on a variety of statistical topics.

Sherod Thaxton is Professor of Law at the UCLA School of Law and Faculty Director of the David J. Epstein Program in Public Interest Law and Policy. He also holds secondary appointments in the Department of Public Policy at the UCLA Luskin School of Public Affairs, and in the Departments of African American Studies and Sociology at the UCLA College of Letters and Sciences. Professor Thaxton teaches Capital Punishment, Criminal Adjudication, Criminal Law, Federal White Collar Crime, Habeas Corpus, and Introduction to Legal Analysis. His scholarship centers on quantitative empirical legal studies, with a substantive focus on criminal law, criminal procedure, and the sociology of crime and punishment. Prior to joining the law faculty, he was the Earl B. Dickerson Fellow and Lecturer in Law at the University of Chicago Law School and an attorney in the Capital Habeas Unit of the Office of the Federal Defender for the Eastern District of California.