No. 14-981

IN THE

Supreme Court of the United States

ABIGAIL NOEL FISHER,

Petitioner,

v.

UNIVERSITY OF TEXAS AT AUSTIN, ET AL.,

Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Fifth Circuit

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. They file this brief in order to point out to the Court the substantial methodological flaws in the research discussed in the Brief *Amicus Curiae* for Richard Sander in Support of Neither Party. Based on over 274 collective years of social science research experience, *amici* have concluded that the research on which that brief relies, Professor Sander's "mismatch" hypothesis, is unreliable, failing basic tenets of research design.

Guido Imbens is a Professor of Economics at the Graduate School of Business at Stanford University. He held positions in the Economics Departments at University of California Berkeley, UCLA, and Harvard University before joining Stanford in 2012. His work has been supported by the National Science Foundation, and he is a fellow of both the Econometric Society and the American Academy of Arts and Sciences. His primary field of interest is econometrics, and he has conducted influential research on a broad range of issues throughout the social sciences, greatly improving social scientists' ability to assess the causal effects of interventions from both field and experimental data. He also works with governments and policy institutions on designing and evaluating economic policy interventions in areas such as education and labor. Along with

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[1] No counsel for a party authored this brief in whole or part, and no counsel or party made a monetary contribution to fund the preparation or submission of this brief. No person other than the amici curiae and their counsel made any monetary contribution to its preparation and submission. The parties have consented to this filing.

Professor Rubin, he is the co-author of a widely acclaimed textbook on principles for causal inference.

Donald B. Rubin is the John L. Loeb Professor of Statistics at Harvard University, where he served as chairman for thirteen years of his three decades there as full Professor of Statistics. He has authored nearly 400 publications (among them several books), including pioneering work on causal inference in experiments and observational studies. His publications have generated nearly 160,000 citations. He is a Fellow of the American Statistical Association, the Institute for Mathematical Statistics, the International Statistical Institute, the Woodrow Wilson Society, the John Simon Guggenheim Society, the New York Academy of Sciences, the American Association for the Advancement of Sciences, the American Academy of Arts and Sciences, and the Alexander von Humboldt Foundation. He is also the recipient of four of the most prestigious awards available to statisticians: the Samuel S. Wilks Medal of the American Statistical Association, the Parzen Prize for Statistical Innovation, the Fisher Lectureship, and the George W. Snedecor Award of the Committee of Presidents of Statistical Societies. He is an Elected Member of the U.S. National Academy of Sciences and an Elected Fellow of the British Academy. Furthermore, he is the recipient of many other awards and honors, including an Honorary Doctorate from the Faculty of Social Sciences and Economics, Otto Friedrich University, Bamberg, Germany.

Gary King is the Albert J. Weatherhead III University Professor at Harvard University—one of only twenty-four with the title of University Professor, Harvard's most distinguished faculty position. He is based in the Department of Government (in the Faculty of Arts and Sciences) and serves as Director of the Institute for

Quantitative Social Science. He has been elected Fellow in eight honorary societies: National Academy of Sciences (2010), National Academy of Social Insurance (2014), American Statistical Association (2009), American Association for the Advancement of Science (2004), American Academy of Arts and Sciences (1998), Society for Political Methodology (2008), American Academy of Political and Social Science (2004), and the Guggenheim Foundation (1994-95). He has won more than forty "best of" awards for his work, including leading contributions to the statistics of causal inference. He was listed as the most cited political scientist of his cohort. His research has been supported by the National Science Foundation, the Centers for Disease Control and Prevention, the World Health Organization, the National Institute of Aging, the Global Forum for Health Research, as well as numerous centers, corporations, foundations, and other federal agencies.

Richard A. Berk is a Professor of Statistics and Criminology at the University of Pennsylvania, where he has appointments in the Department of Statistics in the Wharton School and in the Department of Criminology in the School of Arts and Sciences. He was previously a Distinguished Professor of Statistics at UCLA, a Professor of Statistics and Sociology at University of California, Santa Barbara, and a Professor of Sociology at Northwestern University. He has held visiting appointments at the École Normale Supérieure in Paris in the Department of Earth, Atmosphere and Oceans, and with the Statistics Group of the Los Alamos National Laboratories. He has authored over 200 publications (among them 15 books), including highly respected work on causal inference, regression analysis, machine learning, and forecasting. He has been elected to the Sociological Research Association, and is an Elected Fellow to the American Association

for the Advancement of Science, the American Statistical Association, and the Academy of Experimental Criminology. He has received the Paul S. Lazarsfeld Award for methodological contributions from the American Sociological Association. He is a founding editor of The Evaluation Review, a journal of applied social research. Professor Berk received his B.A. from Yale University and his Ph.D. from The Johns Hopkins University.

Daniel E. Ho is the William Benjamin Scott and Luna M. Scott Professor of Law at Stanford Law School, where he teaches statistics and administrative law. His scholarship centers on quantitative empirical legal studies, and he holds a J.D. from Yale Law School and a Ph.D. in Political Science from Harvard University. He was the Maurice R. Greenberg Visiting Professor of Law at Yale Law School and a Visiting Professor of Law at New York University School of Law. His work has been supported by the National Science Foundation, and his work has been awarded numerous prizes, including the Warren Miller Prize (for an article on causal inference), awarded to the best paper published in Political Analysis. He served as the President of the Society for Empirical Legal Studies (2011-12) and is co-editor of the Journal of Law, Economics, & Organization.

Kevin M. Quinn is a Professor of Law at the UC Berkeley School of Law (Boalt Hall). Previously, he has served as Associate Professor of Government at Harvard University, and as Assistant Professor of Political Science and Adjunct Assistant Professor of Statistics at the University of Washington. He has written extensively on statistical methodology, and he teaches courses on applied statistics and empirical legal studies. He 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. He served as Associate Editor for the Journal of the American Statistical Association and as President of the Society for Political Methodology.

D. James "Jim" Greiner is the William Henry Bloomberg Professor of Law at Harvard Law School. His research focuses on the development of rigorous quantitative methods, with a particular focus on causal inference in observational and experimental settings. His work has been widely published in law reviews (such as the Harvard Law Review and the Yale Law Journal), as well as in peer-reviewed statistics journals (the Review of Economics and Statistics, the Journal of the Royal Statistical Association, and the Annals of Applied Statistics). He teaches courses on civil procedure, voting rights, and expert witnesses. He holds a J.D. from the University of Michigan Law School and a Ph.D. in Statistics from Harvard University.

Ian Ayres is the William K. Townsend Professor at Yale Law School, the Anne Urowsky Professorial Fellow in Law, and a Professor at Yale's School of Management. He has published 11 books and over 100 articles on a wide range of topics, including leading work in empirical legal studies. In 2006, he was elected to the American Academy of Arts and Sciences. He has been ranked as one of the most prolific and most-cited law professors of his generation. He previously taught at the law schools of Harvard University, University of Illinois, Northwestern University, Stanford University, and University of Virginia and served as a research fellow of the American Bar Foundation. From 2002 to 2009, he was the editor of the Journal of Law, Economics, & Organization. He holds a J.D. from Yale Law School and a Ph.D. in Economics from M.I.T.

Richard Brooks is the Charles Keller Beekman Professor of Law at Columbia Law School. Prior to joining the Columbia Law School faculty in July 2013, he was the Leighton Homer Surbeck Professor of Law at Yale Law School. He previously taught at Cornell University and Northwestern University. His scholarship centers on law and economics, often involving empirical components. He holds a J.D. from the University of Chicago and a Ph.D. in economics from University of California Berkeley.

Paul Oyer is the Fred. H. Merrill Professor of Economics at Stanford University's Graduate School of Business, where he teaches the core Human Resources Management class in the M.B.A. program as well as a Ph.D. class in Personnel Economics. Before moving to Stanford in 2000, he was on the faculty of the Kellogg School of Management at Northwestern University. In his pre-academic life, he worked for the management consulting firm of Booz, Allen, and Hamilton, as well as for 3Com Corporation and ASK Computer Systems. He holds a B.A. in Mathematics and Computer Science from Middlebury College, an M.B.A. from Yale University, and an M.A. and a Ph.D. in Economics from Princeton University.

John J. Donohue III is the C. Wendell and Edith M. Carlsmith Professor of Law at Stanford Law School. He has been one of the leading empirical researchers in the legal academy over the past 25 years. He is well-known for using empirical analysis to determine the impact of law and public policy in a wide range of areas, including civil rights and antidiscrimination law, employment discrimination, crime and criminal justice, and school funding. Previously, he was on the faculty of Yale Law School and Northwestern University School of Law, and served as a research fellow with the

American Bar Foundation. He is a member of the American Academy of Arts and Sciences. He has previously served as the editor of the American Law and Economics Review and president of the American Law and Economics Association.

PREFATORY STATEMENT

When this case was last before this Court, Professor Richard H. Sander, along with lawyer and journalist Stuart S. Taylor, Jr., filed a brief *amici curiae* arguing that social-science research has shown affirmative action to be harmful to minority students, based on Professor Sander's so-called "mismatch" hypothesis. *See Fisher v. University of Texas at Austin*, Docket 11-345 (*Fisher I*), Brief Amici Curiae for Richard Sander and Stuart Taylor, Jr. in Support of Neither Party ("Sander *Fisher I* Brief"). Sander has filed a similar brief in the present appeal, in large part repeating the same arguments he made in *Fisher I*. *See Fisher v. University of Texas at Austin*, Docket 14-981 (*Fisher II*), Brief *Amicus Curiae* for Richard Sander in Support of Neither Party ("Sander *Fisher II* Brief").

In *Fisher I*, *amici* filed a brief *amici curiae* demonstrating that Sander's "mismatch" research rests on significant methodological flaws, a brief that Sander has described as "among legal educators, probably the best known of all critiques against the mismatch hypothesis." Sander *Fisher II* Brief at 27.

Amici stand fully behind the arguments they made and the conclusions they drew in their brief in *Fisher I* and reproduce it below for the Court's convenience.[2]

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[2] Citations below are to the Sander *Fisher I* Brief; for ease of reference, *amici* have added citations to the Sander *Fisher II* Brief where the same arguments are made. As noted, while the

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SUMMARY OF ARGUMENT

In *Grutter v. Bollinger*, this Court held that a state has a compelling interest in attaining a diverse student body for the benefit of all students, and that this compelling interest justifies the consideration of race as a factor in university admissions. *See* 539 U.S. 306, 325, 328 (2003). In this, the latest case to consider the constitutionality of affirmative action admissions policies, Professor Richard H. Sander, along with lawyer and journalist Stuart S. Taylor, Jr., filed a brief *amici curiae* arguing that social science research has shown affirmative action to be harmful to minority students. *See* Brief *Amici Curiae* for Richard Sander and Stuart Taylor, Jr. in Support of Neither Party ("Sander *Fisher I* Brief") at 2; *see also* Brief *Amicus Curiae* for Richard Sander in Support of Neither Party ("Sander *Fisher II* Brief") at 2. According to them, a "growing volume of very careful research, some of it completely unrebutted by dissenting work" has found that affirmative action practices are not having their intended effect. Sander *Fisher I* Brief at 2; *see* Brief *Amici Curiae* of Gail Heriot et al. in Support of Petitioner ("Three Commissioners Brief") at 14 ("The Commissioner Amici are aware of no empirical research that challenges [Sander's] findings.").

Sander *Fisher II* Brief cites a handful of more recent articles, it ignores contrary evidence, see, for example, Alice Xiang & Donald B. Rubin, *Assessing the Potential Impact of a Nationwide Class-Based Affirmative Action System*, 30 Stat. Sci. 297 (2015), and relies in large part on the same "mismatch" research that *amici* demonstrated in their brief *amici curiae* in *Fisher I* is fundamentally flawed.

But, as *amici* will show, the principal research on which Sander and Taylor rely for their conclusion about the negative effects of affirmative action—Sander's so-called "mismatch" hypothesis[3]—is far from "unrebutted." Sander *Fisher I* Brief at 2. Since Sander first published findings in support of a "mismatch" in 2004, that research has been subjected to wide-ranging criticism. Nor is Sander's research "very careful." *Id*. As some of those 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. The Sander "mismatch" research—and its provocative claim that, on average, minority students admitted through affirmative action would be better off attending less selective colleges and universities—is not good social science.

Sander's research has "significantly overestimated the costs of affirmative action and failed to demonstrate benefits from ending it." David L. Chambers et al., *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). That research, which consists of weak empirical contentions that fail to meet the basic tenets of rigorous social science research, provides no basis for this Court to revisit

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[3] In essence, "mismatch" is said to result when a minority student attends a more selective university than he would have without affirmative action, based upon a "very large" racial preference. The claim is that because the student's test scores and high school or college grades indicate that he is not as academically qualified to attend the school at which he matriculates as other students, his admission there works to his detriment because "teachers would aim instruction at the median student, and those with weaker preparation would fall behind and learn less." Sander *Fisher I* Brief at 4; *see* Sander *Fisher II* Brief at 17-18.

longstanding precedent supporting the individualized consideration of race in admissions. *Cf. Grutter*, 539 U.S. at 334 ("Universities can * * * consider race or ethnicity more flexibly as a 'plus' factor in the context of individualized consideration of each and every applicant.") (citing *Regents of Univ. of Cal. v. Bakke*, 438 U.S. 265, 315-316 (1978) (opinion of Powell, J.)). In light of the significant methodological flaws on which it rests, Sander's research does not constitute credible evidence that affirmative action practices are harmful to minorities, let alone that the diversity rationale at the heart of *Grutter* is at odds with social science.

ARGUMENT

This Court has held the use of narrowly tailored race-based admissions constitutional in light of the "substantial * * * educational benefits that flow from student body diversity." *Grutter*, 539 U.S. at 330. In their brief *amici curiae*—nominally filed in support of neither party (see generally Sander *Fisher I* Brief) but nonetheless calling for the *judgment* of the Fifth Circuit to be reversed, *id*. at 36—Sander and Taylor argue that "a growing volume of very careful research * * * suggests that racial preferences in higher education often undermine minority achievement," *id*. at 2; see Sander *Fisher II* Brief at 17; accord Three Commissioners Brief at 13-14, 20-21, 24, which in turn purportedly undermines the diversity holding in *Grutter*, *see* Sander *Fisher I* Brief at 15-17. But that "growing volume of very careful research" consists mostly of Sander's own "mismatch" research along with unpublished papers by several others. As recognized by numerous publications refuting Sander's conclusions, that research contains basic methodological errors, thereby invalidating its conclusions. As a result, its conclusions are without value to the Court.

A. "Mismatch" Hypothesis In Brief

Although Sander was not the first researcher to use the term "mismatch" in discussing the effects of race-based admissions policies,[4] he has been rightly credited as a leading proponent of that theory since the publication of his controversial Stanford Law Review article finding "mismatch" in American law schools. *See* Richard H. Sander, *A Systemic Analysis of Affirmative Action in American Law Schools*, 57 Stan. L. Rev. 367 (2004). In that article and in later work, Sander argues that when a minority student attends a college or graduate school as a result of race-based admissions, and his academic credentials are substantially below those of his classmates, he does not thrive. For example, as a result of being surrounded by students with stronger academic credentials, a minority student may end up in the bottom of the grade distribution in difficult classes, and end up opting out of difficult majors that he may have chosen otherwise (often called "science mismatch"). Sander *Fisher I* Brief at 6; *see* Sander *Fisher II* Brief at 18. Similarly, as a result of race-based admissions, a minority student may choose not to pursue graduate-school education ("academic mismatch"), Sander *Fisher I* Brief at 7-8, Sander *Fisher II* Brief at 17-20, or in the case of a law school student, may fail the bar exam ("law school mismatch"), *id*. at 8; see generally Sander, *A Systemic Analysis of Affirmative Action*, *supra*. Ultimately, the mismatch hypothesis holds that affirmative action does more harm than good for minority students, whom Sander and Taylor term "the intended beneficiaries" (Sander *Fisher I*

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[4] *See* Thomas Sowell, *Black Education: Myths and Tragedies* (David McKay 1972); Rogers Elliott et al., *The Role of Ethnicity in Choosing and Leaving Science in Highly Selective Institutions*, 37 Res. Higher Educ. 681 (1996).

Brief at 2, Sander *Fisher II* Brief at 16) of affirmative action. Hence, by curtailing affirmative action, minorities would end up at schools more properly "matched" to their skill sets, and minority academic performance and graduation rates would rise. *See* Sander *Fisher I* Brief at 32-35.

Mismatch research is premised on a series of causal inferences. For example, the mismatch hypothesis is that African-American undergraduates have transferred out of rigorous science majors *because of* mismatch. *Id*. at 6-7; *see* Sander *Fisher II* Brief at 18, Richard Sander & Roger Bolus, *Do Credential Gaps in College Reduce the Number of Minority Science Graduates?* (Project SEAPHE Working Paper, July 2009), *available at* http://www.seaphe.org/working-papers/. Proponents of this research claim that mismatch at law schools has *caused* African-Americans to learn less in law school, earn lower grades, fail the bar, and fare worse in employment outcomes. Sander *Fisher I* Brief at 8-9, *see* Sander *Fisher II* Brief at 17, 24. And, most controversially, Professor Sander contends that affirmative action has had the effect of *decreasing* the total number of black lawyers. Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 473.

B. Sander's "Mismatch" Research Does Not Represent A Consensus In Social Science

Since the initial publication of his "mismatch" article, Sander's work has been subject to wide-ranging criticism for its methodological flaws. *See*, *e.g.*, Ian Ayres & Richard Brooks, *Does Affirmative Action Reduce the Number of Black Lawyers?*, 57 Stan. L. Rev. 1807, 1809 (2005) ("[E]ven within his [Sander's] framework, there is not persuasive evidence indicating that affirmative action is responsible for lowering the number of

black attorneys."); 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*, at 1857 ("The conclusions in *Systemic Analysis* rest on a series of statistical errors, oversights, and implausible assumptions."); Michele Landis Dauber, *The Big Muddy*, 57 Stan L. Rev. 1899, 1902 (2005) ("Unfortunately, Sander has muddied rather than clarified the waters with 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*, J. Blacks Higher Educ. (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."); Daniel E. Ho, *Affirmative Action's Affirmative Actions: A Reply to Sander*, 114 Yale L.J. 2011, 2011 (2005) ("[T]he impressive-sounding points in Sander's Response violate basic methodological principles and are incorrect."); 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) ("In the end, Professor Sander's arguments fail on their methodology, their logic, and their real-world application."); 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*.").

The hallmark of reliable empirical work is that it can be validated by other researchers. A wide array of social scientists have studied the impact of elite educational institutions on student outcomes, reaching conclusions directly contrary to those of mismatch. *See*, *e.g.*, Sigal Alon & Marta Tienda, *Assessing the "Mismatch" Hypothesis: Differences in College Graduation Rates by Institutional Selectivity*, 78 Soc. Educ. 294, 309 (2005) ("Minority students' likelihood of graduation increases as the selectivity of the institution attended rises."); 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. Res. 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 Res. Higher Educ. 214, 232 (2008) ("[M]inorities benefit from attending the most elite institutions."); Tatiana Melguizo, *Are Students of Color More Likely to Graduate from College If They Attend More Selective Institutions? Evidence from a Cohort of Recipients and Nonrecipients of the Gates Millennium Scholarship (GMS) Program*, 32 Educ. Eval. & Pol'y Analysis 230, 244 (2010) ("The results of this study suggest that the probability of attaining a bachelor's degree increases [for minority students] with the selectivity of the institution attended."); 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. Res. 1257, 1257 (2007) ("[S]electivity improves black probabilities of graduation."); Doug Williams, *Does Affirmative Action Create Educational Mismatches in Law Schools?* 42 (Working Paper, Apr. 2009), *available at* econ.duke.edu/~hf14/ERID/Williams.pdf ("All of the previous papers that

have conducted formal tests of the mismatch hypotheses have concluded that there is no evidence of mismatch effects in the [Bar Passage Study]."); *see also* William G. Bowen & Derek Bok, *The Shape of the River* 259 (Princeton Univ. Press 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 (Princeton Univ. Press 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.").

In short, those relying on mismatch research mischaracterize the state of social science evidence and describe a consensus that does not exist. The Court should not rely on the mismatch research.[5]

For clarity, *amici* will explain why the research on which mismatch rests is dubious.

C. The "Mismatch" Research Violates Basic Principles Of Causal Inference

The chief empirical research offered by the Sander *Fisher I* Brief—little of which is peer-reviewed and most of which remains unpublished—violates basic principles of causal inference that are widely accepted in the scientific community. As *amici* explain, there is no evidence that affirmative action hurts minority

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[5] Indeed, were this a district court proceeding, mismatch research should not pass the core Daubert tests of surviving peer review and being generally accepted by experts in the field. *See generally Daubert v. Merrill Dow Pharm.*, 509 U.S. 579 (1993).

students who attend school under such programs.[6] Attending a more elite school does not appear to cause those students harm.

1. The Evidence

Although mismatch has been discussed in a variety of contexts, Sander posits that the law school setting is "uniquely appropriate for studying the mismatch effect," because, unlike in other higher education settings, the bar exam is "more or less [a] uniform test[] taken by graduates to measure their legal learning." Sander *Fisher I* Brief at 8. Much of the cited research has been in the law school context. *Amici* therefore focus the rest of their arguments on the methodological flaws contained in Sander's and economics professor Doug Williams's law school mismatch research (which dominate the empirical findings of the Sander *Fisher I* Brief), although the same methodological challenges also affect mismatch research in other settings.

Law school mismatch alleges that large racial preferences have "seriously damaged the academic performance of black law students, contributing to lower graduation rates and much lower success rates on bar exams." *Id*. at 8 (citing Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 440-448), *see* Sander *Fisher II* Brief at 17, 24. Finding that a student's law

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[6] This proposition is counterintuitive because it would imply that the very fact of giving minority students extra options, by admitting them to more selective institutions, harms them, and that these students would personally benefit from being prevented from attending such institutions. It rests on the presumption that these students are themselves not good judges of what is in their interest, and that given the option of attending a more selective institution they would fail to make the "right" choice of attending the less selective institution.

school grades have a stronger association with bar passage than the tier of the law school the student attended, Sander concludes that less-qualified students are better off attending a less-selective school where they will perform better and thus be more likely to pass the bar exam. Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 426, 429. The central empirical claim is that going to a higher-tier law school causes less qualified students to learn less, as reflected through lower grades, and decreases bar performance by a greater factor than school quality increases it. *See id*. at 449-450; Williams, *supra*, at 9.

2. Research Principles For Causal Inference

A causal effect is the difference between two "potential outcomes." For example, a law student may have one potential outcome of career trajectory if he attended a higher-tier law school and another potential outcome of career trajectory if he 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. *See* Paul W. Holland, *Statistics and Causal Inference*, 81 J. Am. Stat. Ass'n 945, 947 (1986); Donald B. Rubin, *Bayesian Inference for Causal Effects: The Role of Randomization*, 6 Annals Stat. 34, 38 (1978). Causal inference thereby always involves estimating the *counterfactual* outcome with observed data, *e.g.*, how the student at a higher-tier school *would* have fared had he gone to a lower-tier school. An experiment addresses this problem, by comparing students who are similar in pre-existing characteristics (*e.g.*, ability), but are randomly assigned to different tier schools. Because the two experimental groups would differ only in tier of school attended, differences in the

outcomes for the two groups would provide a valid estimate of the causal effect of law school tier. *See generally* Guido W. Imbens & Donald B. Rubin, *Causal Inference in Statistics and Social Sciences* (Cambridge Univ. Press 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 Non-randomized Studies*, 66 J. Educ. Psychol. 688 (1974).

Although actually conducting such an experiment is obviously infeasible, the experimental model highlights the primary task of research with data in which students have not been randomly assigned. Specifically, to draw a 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. Imbens & Rubin, *supra*, at ch. 15. In each of these three regards, the Sander/Williams evidence falls short.

3. Methodological Flaws

The Sander empirical evidence consists of "regression analysis" that predicts bar passage for all students that graduated law school with the variables of undergraduate GPA, LSAT score, gender, race, law school tier, and law school GPA. *See* Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 444-445. The association between law school tier and bar passage is positive, but smaller in absolute magnitude than the association between law school GPA and bar passage. *Id*. Based on this analysis, Sander concludes that less-

qualified students should attend lower-tier law schools where they would presumably achieve higher grades and that affirmative action hurts minority students. *Id*. at 444 tbl.6.1.

That inference is invalid for three reasons.

a. Invalid Comparisons

As to the broad claim about the causal effect of affirmative action, the current analyses are simply uninformative. All the schools in the bar-passage data employ some form of affirmative action. Because there is no comparison group of schools that do not practice affirmative action, no broad inference about the effects of affirmative action can be sustained.[7]

Moreover, the primary comparison that Sander and Williams employ is that of black and white students. *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 * * *."); Williams, *supra*, at 18 ("[O]ne approach is to use black as a proxy for being negatively mismatched and white as a proxy for being matched."). This comparison assumes that black students at selective institutions would have fared similarly to white students at less-selective institutions in the absence of affirmative action. For example, the estimate for how a *black* student at Yale Law School would have performed at a lower-tier school might be based on a white student at the University of Alabama Law

[7] 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.

School.[8] This comparison violates the principle of creating groups that are comparable in all pre-existing respects except for law school tier. Usual tenets of research design require that a study hold constant pre-existing attributes such as race and gender. *See* Imbens & Rubin, *supra*, at ch. 12. By comparing *black* students at higher-tiered schools with *white* students at lower-tiered schools, Sander and Williams violate these basic principles.

b. Adjusting For Pre-Existing Characteristics

Proper research design requires that we compare students with similar pre-existing characteristics, who

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[8] Using Yale Law School and the University of Alabama Law School is consistent with the Sander and Williams coding of the first two tiers of law schools, although no specific schools are ever disclosed in the data. The LSAC Bar Passage Study clusters anonymized schools based on factors such as cost, size, selectivity, faculty/student ratio, percent minority, and average LSAT and undergraduate GPA. *See* Linda F. Wightman, *User's Guide: LSAC National Longitudinal Data File* 8 (1999). Sander reorders these clusters by the median entering credentials of white students to create a tier system. Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 416. Sander's top tier includes 16 schools that "are the most selective and the most expensive" with "the highest UGPAs and LSAT scores." Wightman, *supra*, at 16; Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 430. Sander's second tier includes "14 large, highly selective law schools that enroll student bodies that have UGPAs and LSAT scores that are among the highest in the country." Wightman, *supra*, at 16; Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 430. Using the current U.S. News and World Report rankings (not tiers), Yale would likely be a tier-one school and the University of Alabama Law School would likely be a tier-two school under Sander's coding. *See* U.S. News and World Report, *Best Law Schools*, http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-law-schools/law-rankings (last visited October 26, 2015).

nonetheless attend different law school tiers. Sander and Williams, however, adjust not only for pre-existing characteristics, but also for *outcomes*. Specifically, their bar passage analyses (i) hold constant law school graduation (by examining only students that graduated), see Sander, *A Systemic Analysis of Affirmative Action*, *supra*, at 444; Williams, *supra*, at 14, and (ii) control for law school grades, despite the fact that a central component of the mismatch hypothesis is that law school tier affects both law school graduation and grades. Not only is this approach inconsistent with mismatch, but it will also fail to generate valid inferences about the causal effect of law school tier. Adjusting for outcomes will generally not result in valid estimates of causal effects. *See* Andrew Gelman & Jennifer Hill, *Data Analysis Using Regression and Multilevel/Hierarchical Models* 188-190 (Cambridge Univ. Press, 2007); Imbens & Rubin, *supra*, at ch. 12; Daniel E. Ho et al., *Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference*, 15 Pol. Analysis 199, 202 (2007); Paul R. Rosenbaum, *The Consequences of Adjustment for a Concomitant Variable That Has Been Affected by the Treatment*, 147 J. Royal Sta. Soc'y Series A (Gen.) 656 (1984).[9]

[9] Principled methods for addressing these issues exist. For accounting for intermediate outcomes, see Constantine Frankgakis & Donald B. Rubin, *Principal Stratification in Causal Inference*, 58 Biometrics 21 (2002). For accounting for law school students that do not graduate, see Junni Zhang & Donald B. Rubin, *Estimation of Causal Effects via Principal Stratification When Some Outcomes Are Truncated by "Death,"* 28 J. Educ. & Behav. Stat. 353 (2003); Donald B. Rubin, *Causal Inference Through Potential Outcomes and Principal Stratification: Applications to Studies with "Censoring" Due to Death*, 21 Stat. Sci. 299 (2006).

Suppose, for example, that we conducted the ideal experiment, randomizing 200 students to attend selective and less-selective institutions. Assume that the results are that 95 out of 100 graduate at the selective institution, and that 70 pass the bar exam. Meanwhile, at the less selective institution, 80 out of 100 graduate, and 60 pass the bar. That experiment suggests that students *benefit* from attending a selective institution, both in terms of graduation and bar passage. If we focus only on those who graduated, however, the bar passage rate is 0.74 at the selective institution (70/95), and 0.75 at the less selective institution (60/80). Referring to these findings would lead a reader to wrongly infer that a more selective law school harms students. The selective law school, possibly via improved teaching and better resources, manages to graduate more students. But the subsets of students graduating from either school are not fully comparable.

Adjusting for such outcomes (rather than pre-existing characteristics), as the Sander studies do, contaminates inferences about the causal effect of law school tier. Indeed, controlling for graduation and grades leads Sander to claim that there is *no economic return to attending an elite law school at all, regardless of ethnicity*. *See* Richard H. Sander & Jane Yakowitz Bambauer, *The Secret of My Success: How Status, Prestige and School Performance Shape Legal Careers* (UCLA School of Law Research Paper No. 10-26, July 2010), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1640058 (finding that law school grades are more highly correlated than law school tier in a regression of economic returns and that therefore elite law schools have no causal effect on income).

c. The Effect Of Law School Tier

The credibility of a causal inference depends on the credibility of the assumptions. One natural way forward with the bar-passage data is to compare students with identical observed pre-existing characteristics (*i.e.*, undergraduate GPA scores, LSAT scores, race, and gender) who attend different law school tiers. The critical assumption is that holding constant these factors, there are no other systematic differences between students in the different law school tiers. In other words, female black students with GPAs of 3.8 and LSAT scores of 168, some of whom attend Yale Law School and some of whom attend the University of Alabama Law School, are comparable, and any systematic differences in outcomes between those attending Yale versus Alabama are due to the difference in the law school attended. The existence of important unobserved differences between these students that affect bar performance invalidates the estimates. If the Yale Law student, for example, is already predisposed to taking the bar in a jurisdiction with a tougher exam such as California or New York, the assumption is violated, and the researcher would draw an 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.[10] *See* Ho, *Why Affirmative Action Does Not Cause Black Students to Fail the Bar*, *supra*, at 2002-04. Taking into account these principles of research

[10] 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.

design, there is simply no evidence of the harms of mismatch suggested by the Sander *Fisher I* Brief.

D. Better-Designed Studies Contradict "Mismatch"

It is possible to avoid the rather basic methodological problems underlying the mismatch research. To that end, *amici* draw this Court's attention to examples of recent research that employ better-conceived research designs with observational data.

Stacy Berg Dale and Alan B. Krueger have employed careful methodology in two papers examining the return from college selectivity over a student's subsequent career. The first study was published a decade ago, *Estimating the Payoff to Attending a More Selective College: An Application of Selection on Observables and Unobservables*, 117 Q.J. Econ. 1491 (2002). In 2011, Dale and Krueger returned to the topic in *Estimating the Return to College Selectivity over the Career Using Administrative Earnings Data* (Nat'l Bureau of Econ. Research, Working Paper No. 17159, June 2011), *available at* http://www.nber.org/papers/w17159.

In the recent work, they utilize tax data to examine the earnings of students who attended college in both 1976 and 1989. The Dale and Krueger model considers the college the student attended, conventional characteristics, a plausible measure of what is typically unobserved (ability and motivation), and the monetary payoff of attending a more selective college against the student's actual earnings. *See* Dale & Krueger 2011, *supra*, at 5-8.

In both studies, Dale and Krueger examine characteristics that are commonly used as proxies for college quality (average SAT score, the Barron's index, and

net tuition). They also adjust for certain "unobservable factors" by using a "self-revelation model." This model assumes that students signal their potential ability, motivation, and ambition (typically unobserved) by the choice of schools to which they apply. Dale and Krueger estimate, somewhat surprisingly, that better colleges generally do not increase earnings for either the 1976 and 1989 cohort of students. *Id*. at 25. They find, however, "[n]otable exceptions * * * for racial and ethnic minorities (black and Hispanic students) and for students whose parents have relatively little education; for these subgroups, our estimates remain large, even in models that adjust for [typically] unobserved student characteristics." *Id*. at 5. In other words, the Dale and Krueger research suggests—contrary to mismatch—that attending more selective colleges may result in an increase in minority earnings.

They conclude their paper by mentioning the caveats of their work, most notably that their analysis does not pertain to a nationally representative sample of schools and that their selection-adjusted model is imprecisely estimated. *Id*. at 25. Nowhere do Dale and Krueger control for outcomes, and their analysis holds constant minority status. Unlike Sander's mismatch research, Dale and Krueger exercise appropriate caution in making far-ranging conclusions from a limited set of data.

* * * * *

Whether one finds Sander's conclusions highly unlikely or intuitively appealing, his "mismatch" research fails to satisfy the basic standards of good empirical social science research. The Sander *Fisher I* Brief misrepresents the acceptance of his hypothesis in the social science community and, ultimately, the validity of mismatch. Numerous examples exist of better ways to perform the type of research Sander undertook. *See*

Part D, *supra*. Sander's failure to set up proper controls to test his hypothesis and his reliance on a number of contradictory assumptions lead him to draw unwarranted causal inferences. At a minimum, these basic research flaws call into question the conclusions of that research.

CONCLUSION

In light of the many methodological problems with the underlying research, *amici curiae* respectfully request that the Court reject Sander's "mismatch" research discussed in the Brief *Amici Curiae* for Richard Sander and Stuart Taylor, Jr.

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