

## REVISITING LAW SCHOOL MISMATCH: A COMMENT ON BARNES (2007, 2011)

*Doug Williams, Richard Sander, Marc Luppino & Roger Bolus\**

### INTRODUCTION

In this issue, the *Northwestern University Law Review* revisits a 2007 essay by Katherine Barnes in which she entered the academic debate over whether law school affirmative action programs help their putative beneficiaries.<sup>1</sup> In a well-known 2004 article, Richard H. Sander argued that these programs hurt minorities because large admissions preferences put many minority students in schools where their credentials—that is, their LSAT scores and undergraduate grades—are far below those of the other students.<sup>2</sup> These credential gaps create “educational mismatch”: according to the mismatch hypothesis, these mismatched students learn less than they would at schools where their credentials gaps were smaller, and their graduation rates and bar passage rates suffer as a result.<sup>3</sup> Barnes approached the debate with an interesting idea for testing both the effects of law school admissions preferences on students and the aggregate impact of affirmative action on the number of minority lawyers.<sup>4</sup> She reported an array of stun-

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\* Doug Williams is the Frank W. Wilson Professor of Economics at the University of the South; Richard Sander is a Professor of Law at UCLA School of Law; Marc Luppino is an economist at the Bureau of Economics, Federal Trade Commission; and Roger Bolus is the Principal Psychometrician for the UCLA/VA Center for Outcomes Research and Education.

<sup>1</sup> Katherine Y. Barnes, *Is Affirmative Action Responsible for the Achievement Gap Between Black and White Law Students?*, 101 NW. U. L. REV. 1759 (2007).

<sup>2</sup> Richard H. Sander, *A Systemic Analysis of Affirmative Action in American Law Schools*, 57 STAN. L. REV. 367 (2004).

<sup>3</sup> The mismatch hypothesis implicitly posits that instructors aim the level of instruction at the middle student. Doug Williams, *Does Affirmative Action Create Educational Mismatches in Law Schools?* (Apr. 13, 2009) (paper presented at the 2010 ALEA meetings), <http://econ.duke.edu/~hf14/ERID/Williams.pdf> (reviewing the empirical literature that has appeared since Sander’s original article and presenting several alternate empirical tests of law school mismatch, which consistently find strong support for mismatch effects on minority bar passage rates).

<sup>4</sup> Barnes advanced a model in which outcomes for law students, such as graduating from law school and passing the bar exam, are modeled as functions of a few basic characteristics of each student: the student’s credentials at the start of law school, such as LSAT score and undergraduate grades; the tier of law school the student attends; and the student’s race. *See Barnes, supra* note 1, at 1801. Barnes followed a novel approach by using a very flexible functional form that allows these basic characteristics to interact with one another and to take on higher-order powers; this imposes very few *a priori* assumptions on how the data and the model fit together.

ning results, including an estimate that students with weak academic credentials would increase their chances of passing the bar by as much as a factor of *eight* if they attended an elite law school.<sup>5</sup> Barnes's findings were taken by many as important evidence against the "mismatch theory."<sup>6</sup>

Barnes's results are wrong. We tried to replicate them, got very different results, contacted her, and she could not replicate them either. The source of Barnes's errors has been a mystery since Barnes lost the computer code that produced her results. She has now created new code and written a correction, which also appears in this issue.<sup>7</sup> This Response briefly critiques both Barnes's original *Northwestern University Law Review* piece and her correction.

Barnes suggests that her revised results still provide evidence against the mismatch theory, or at most are neutral. A central conclusion of her new analysis is that ending law school affirmative action would produce no meaningful change in the number of black lawyers.<sup>8</sup> This might seem, at first glance, to suggest an absence of mismatch effects. But Barnes's model assumes that, without affirmative action, 21.8% fewer blacks would enter law school; this, then, implies that ending race-based admissions preferences would increase by 27% the chance that a typical black matriculant would graduate and pass the bar.<sup>9</sup> This is an underestimate,<sup>10</sup> and moreover, Barnes's corrected model implies large mismatch effects and a large cost to the marginal black students, who are today admitted to law schools under affirmative action and later experience low graduation and bar passage rates.

We address here three questions: How were these errors discovered? Does Barnes's follow-up piece correct the errors? And what does Barnes's original model, correctly computed, say about the mismatch issue?

## I. BACKGROUND

The original Barnes essay provided empirical estimates of the rate at which students at particular points in the credential distribution would pass the bar if they attended law schools with different levels (measured as four "tiers") of selectivity.<sup>11</sup> In her results, predicted bar passage rates varied

<sup>5</sup> *Id.*

<sup>6</sup> See, e.g., Richard Lempert with William Kidder, *Testimony for the U.S. Commission on Civil Rights*, in U.S. COMM'N ON CIVIL RIGHTS, *AFFIRMATIVE ACTION IN AMERICAN LAW SCHOOLS* 51, 66 (2007), available at <http://www.usccr.gov/pubs/AALSreport.pdf>.

<sup>7</sup> Katherine Y. Barnes, *Is Affirmative Action Responsible for the Achievement Gap Between Black and White Law Students? A Correction, A Lesson, and an Update*, 105 NW. U. L. REV. 791 (2011).

<sup>8</sup> *Id.* at 808.

<sup>9</sup> If only 78.2% of previous blacks get admitted to law school without affirmative action, then blacks would have to graduate and pass the bar at a rate higher by a factor of more than 1.27 ( $100 \div 78.2$ ) to have no change in the number of black lawyers. On the 21.8% figure, see *infra* note 33.

<sup>10</sup> See *infra* Part IV.

<sup>11</sup> See Barnes, *supra* note 1, at 1781 tbl.2A, 1788 tbl.5.

enormously depending on the tier attended. Black and white student outcomes at all credential levels—especially in the low-credential estimates—improved at each step up the hierarchy of law schools.<sup>12</sup> This is the opposite of what “mismatch theory” predicts: under that theory, low-credential students are predicted to have worse outcomes at more elite schools. But many of Barnes’s estimates contradicted known facts. In particular, blacks at historically black law schools (HBL schools) have reasonably high bar passage rates,<sup>13</sup> yet Barnes’s results suggested that such blacks almost never passed the bar.<sup>14</sup>

Doug Williams contacted Barnes in 2008 and asked for her statistical code because, in exploring her model, he was generating different results for her core tables. Although she provided code to produce some of the later results in her paper, she did not provide code for the core tables where the problems seemed to lie. Williams shared his attempted replication results with Sander. To confirm the errors that Williams discovered in his replication, Sander contacted Dr. Roger Bolus, a psychometrician with experience on bar passage issues. Sander asked Bolus to attempt his own independent replication of Barnes’s results: Bolus’s results closely matched those of Williams and also widely diverged from Barnes’s.<sup>15</sup>

In mid-2009, we wrote a reply to her essay and sent it to the *Northwestern University Law Review*. The editors contacted Barnes, who reported that her original code had been lost in her move from Washington University to the University of Arizona as a result of switching computers. As she reports in her revision, she created new code, which produced results that, in our view, are very different from her original results.<sup>16</sup> But Barnes’s new code does make it possible for us to analyze why her results still differ in important ways from our attempt to estimate her original model.<sup>17</sup>

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<sup>12</sup> *Id.*

<sup>13</sup> The principal data source used by Barnes, and by us in this Response, is the Bar Passage Study (BPS), a unique panel study sponsored by the Law School Admissions Council in the 1990s that tracked graduation and bar outcomes for some 27,000 students. LINDA F. WIGHTMAN, LAW SCH. ADMISSION COUNCIL, LSAC NATIONAL LONGITUDINAL BAR PASSAGE STUDY 6 (1998), available at <http://www.unc.edu/edp/pdf/NLBPS.pdf>. Analysis of the entire BPS database reveals that blacks who graduate from “heavily minority” law schools have a first-time bar passage rate of 57%. *Data Sets for Northwestern University Law Review* 105:2, NW. U. L. REV. (Oct. 1, 2011), <http://www.law.northwestern.edu/lawreview/issues/105.2.data.html> (calculations by Doug Williams et al.). This is only slightly lower than the first-time bar passage rate of blacks at all other law schools in the BPS (62%), *id.*, even though blacks at the heavily minority schools have, on average, significantly lower entering credentials than blacks at other law schools.

<sup>14</sup> Barnes, *supra* note 1, at 1781 tbl.2A, 1788 tbl.5.

<sup>15</sup> When Bolus and Williams compared their codes, they found that different choices about how to code idiosyncratic observations (e.g., students who showed no graduation result but took a bar exam) accounted for the slight differences in their results. We present here the results based on what we think are the soundest coding choices.

<sup>16</sup> See *infra* Tables 1 & 2.

<sup>17</sup> See *infra* Part II.

Before moving on to our substantive findings, it is worth asking what lessons law reviews might learn from this experience. First, we think empirical pieces should be peer-reviewed to evaluate the methodology, reasoning, and findings of the authors. Although it is not certain that a peer review would have caught Barnes's original errors, we think these errors very possibly would have been caught by a reviewer familiar with her main data source, the Bar Passage Study (BPS).<sup>18</sup> Law reviews should also have policies in place to quickly redress discovered errors in published empirical work.<sup>19</sup> Finally, these problems would have been less likely to occur and much easier to detect if law reviews and other law journals required authors of empirical pieces to provide public access to their datasets and statistical code with limited exceptions for confidential datasets, which are not an issue here. A few peer-reviewed journals in law and in economics take this approach, but most do not. All journals should.

## II. CORRECTING THE ORIGINAL MODEL

Tables 1 and 2 compare Barnes's original results with her revision and our replication.<sup>20</sup> First for whites and then for blacks, the two tables show the success rates of students with credentials ranging from very low to average when they attend four progressively more selective tiers of law school ranging from HBL schools to "top 30" schools. Percentiles are based on the entire student population—the fifth and tenth percentiles are particularly important for mismatch issues because most black students are clustered near the bottom of the credential distribution, as are other minorities, though to a lesser extent.

Barnes's original results indicated that minority students reap dramatic benefits from attending an elite school, especially those with credentials at the fifth or tenth percentile. Her revised numbers are often dozens of percentage points different from her original numbers, raising questions as to how she generated her original results. Her revised numbers also suggest a different story. Low-credential students tend to have better outcomes at less elite schools, especially in passing the bar. For example, Barnes now reports that whites at the fifth percentile have a 77.9% chance of passing the

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<sup>18</sup> For example, consider Table 2A in Barnes's original essay, where she reports the likelihood of passing the bar for students credentialed at the fifth and tenth percentiles is lowered by 50.1 and 46.7 percentage points for students attending historically black schools compared to mid-range schools. See Barnes, *supra* note 1, at 1781 tbl.2A. These are the sort of large and unexpected effects that should invite the scrutiny of peer reviewers.

<sup>19</sup> Journals edited by academics generally make it a high priority to quickly and thoroughly provide notice when fundamental problems are discovered in a published article. They do so because they see the journal's credibility and reliability as its stock in trade, and they are perhaps better able to do so than student-edited journals because they have greater continuity of editorial control and have an immediate grasp of the significance of problems once those are pointed out to them.

<sup>20</sup> See *infra* Tables 1 & 2. These tables show the results from Barnes's original tables. See Barnes, *supra* note 1, at 1777 tbl.1A, 1781 tbl.2A, 1787 tbl.4, 1788 tbl.5.

bar if they attend an HBL school, a 73.7% chance at a low-range school, and a 64.2% chance at a top 30 school. These patterns are consistent with mismatch theory.

Yet Barnes's revised results are still different from our replication, sometimes by substantial amounts.<sup>21</sup> Why is this? It is not because of errors: Barnes has provided us with her new code, and we can generate her numbers. The difference lies in two ways that Barnes has changed her original methods.

We can split the law students in the BPS study into four groups:

- a. Students who start law school but never graduate
- b. Students who graduate from law school but never take a bar exam
- c. Students who graduate from law school, take a bar exam, but never pass
- d. Students who graduate from law school and pass a bar exam—i.e., lawyers

In analyzing graduation outcomes, both Barnes and we code students as graduates if they are in groups *b*, *c*, or *d* and define them as dropouts if they are in group *a*. (This is why many of the revised Barnes graduation probabilities are very similar to the our results.) In analyzing bar passage, both Barnes and we define someone as a “success” on the bar if they are in group *d*. But in her revision, Barnes codes people as a “failure” in her bar equations differently than we do.<sup>22</sup> She codes groups *a* and *c* as failures and excludes group *b* from the analysis whereas we code groups *b* and *c* as failures and exclude group *a* from the analysis. In other words, Barnes includes in her bar passage analysis people who never finish law school and counts them as failures; we include in our analysis law school graduates who never take the bar and count them as failures. Although our coding differs from Barnes's coding in two ways, the difference between our analysis and Barnes's revised results is driven by Barnes's coding of dropouts as “failures” in her analysis of bar results.<sup>23</sup>

<sup>21</sup> See, e.g., *infra* Table 2.

<sup>22</sup> “Success” and “failure” in this context mean that someone does or does not achieve a particular outcome (or one of a set of outcomes) of interest.

<sup>23</sup> The definition that Barnes uses in her revision appearing in this issue is the same variable that Yoon and Rothstein define as “Bar Passage If Attempt” in their 2006 working paper, Jesse Rothstein & Albert Yoon, *Mismatch in Law School* (Ctr. for Econ. Policy Studies, Working Paper No. 123, 2006), <http://www.princeton.edu/ceps/workingpapers/123rothstein.pdf>, whereas the definition that Barnes uses in her SSRN paper is the same variable that Yoon and Rothstein define as “Bar Passage.” See Katherine Y. Barnes, *Is Affirmative Action Responsible for the Achievement Gap between Black and White Law Students? A Correction, a Lesson, and an Update* (Aug. 12, 2011), <http://ssrn.com/abstract=1908530>. Neither of these definitions is an “error”; they are alternative reasonable definitions of what it means to successfully complete law school. Barnes states that we criticize her for omitting group *b*. Barnes, *supra* note 7, at 799 n.23. This is wrong. Our criticism is that she changed her method by including group *a* in her revision. Our criticism is not that this change in method from her original paper is an error but rather that it has the effect of masking the effect of mismatch on bar passage rates for actual test takers.

We did not choose this bar passage definition arbitrarily. We based it on a close reading of Barnes's original paper and then checked with Barnes to make sure our reading was correct.<sup>24</sup> Her original essay examined the process of becoming a lawyer as a two-stage process: first one must graduate from law school, and then one must pass the bar. Mismatch can affect either of these outcomes, so it is natural to examine them separately. Barnes's new bar passage measure conflates the two outcomes by including as bar failers students who never graduate and therefore are never eligible to attempt the bar exam.

We also believe that Barnes's revision changes the way she originally determined which students were at the fifth percentile, tenth percentile, and so on. In her original essay, Barnes argued that LSAT scores and undergraduate grade point averages (UGPA) should be treated as independent credentials<sup>25</sup> and that she was measuring student ranking for each credential separately. Williams and Bolus, working independently, both concluded in their replications that a "fifth percentile" student in Barnes's original model was someone whose LSAT score and UGPA were both at the fifth percentile. In her revision, though, Barnes relies instead on a combined academic index.<sup>26</sup> As a result, a "fifth percentile" student is now academically stronger in her model than in our replication.<sup>27</sup> Her graduation and bar passage estimates are therefore higher than other models predict, and her "low credential" groups is less illustrative of serious mismatch. Barnes's new piece, in short, is not merely a correction of the original essay but presents instead the results of a subtly altered model.

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In any case, we think there is much to be said, in analyses of post-graduate performance, for counting as "failures" only those people who actually attempt the bar exam, and doing so does not substantially change the results in our model.

<sup>24</sup> When we first set about replicating Barnes's analysis, we wrote to her to ask how her bar passage variable was constructed. We then (in February 2009) set up a conference call with Barnes, Williams, Bolus, and Sander and discussed with Barnes how she had defined her bar passage variable. She told us then that the bar passage rates listed in her Tables 2 and 5 were determined by dividing the number of persons who ever passed any bar exam by the number of persons who graduated from law school. A few days later, we sent her output and code showing our results based on this definition, and how the results differed from her original results. We had a number of conversations with Barnes after that point, and she never suggested that our analysis was faulty. Only twenty-two months later did Barnes dispute this definition.

<sup>25</sup> Barnes, *supra* note 1, at 1774. Much of the law school mismatch literature, including Sander's original paper, combined LSAT scores and UGPA into a weighted "index" of credentials and then used that as an explanatory variable. See Sander, *supra* note 2, at 393. As recently as February 2011, Barnes conceded in a draft that her original paper did not use such an index, but she now insists that she did. Katherine Y. Barnes, *Is Affirmative Action Responsible for the Achievement Gap Between Black and White Law Students? A Correction, a Lesson, and an Update* 4 n.16 (Feb. 11, 2011) (earlier draft of Barnes's piece) (on file with the Northwestern University Law Review).

<sup>26</sup> Barnes, *supra* note 7, at 796.

<sup>27</sup> Barnes's fifth percentile student is close to our tenth percentile student in credentials.

### III. WHAT DOES BARNES'S ORIGINAL MODEL SAY ABOUT THE MISMATCH EFFECT?

Table 3 summarizes our own replication, which we believe faithfully and accurately reports outcomes from Barnes's original model. For each race, credential level, and law school tier, Table 3 reports three outcomes: law student graduation rates, the proportion of graduates who pass the bar exam, and the proportion of law school matriculants who eventually become lawyers.<sup>28</sup> Below each proportion we report standard errors computed through standard bootstrap methods, and we indicate when the rate for students at a non-elite school is statistically significantly different from the rate of students at a top 30 school. What do these results say about the mismatch effect?

Consider first the fifth percentile students. These students experience the smallest "credential gap" at HBL schools and the largest gap at the elite top 30 schools. Mismatch theory predicts that these students will have better outcomes at HBL schools and worse outcomes at more elite schools, with the worst results at the top 30 schools. For graduation rates, we see no clear pattern. But for the "bar passage" and "lawyer" outcomes, the pattern closely follows mismatch predictions, and the differences are generally statistically significant.

The patterns for tenth percentile students are similar to those for fifth percentile students but more muted. This, too, fits the mismatch hypothesis, which predicts that the harmful effect of going to an elite school will be smaller for students with higher credentials. Indeed, the results for the fiftieth percentile in this model suggest that attending a more elite school leads to better rather than worse outcomes.<sup>29</sup> It is worth noting that Barnes advanced the thesis in her original essay that racial effects, not mismatch effects, were driving poor black outcomes in graduation and bar results.<sup>30</sup> But Table 3 shows that this conclusion does not follow from the true results of Barnes's model. If anything, the mismatch effects for fifth and tenth percentile students—that is, the decline in good outcomes that results from going to an elite rather than an HBL school—are *larger* for whites than for blacks.<sup>31</sup>

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<sup>28</sup> The estimate of this "lawyer" rate is, conceptually, the product of the other two percentages: the graduation rate and bar passage rate. But because we used Barnes's modeling process to estimate lawyer production rates directly, the lawyer rates we report do not exactly match the product of the other two rates.

<sup>29</sup> Because Barnes's model suffers from selection bias, *see infra* Part IV, we do not think it should be used to evaluate the point at which mismatch effects disappear. The important point is that the size of mismatch effects steadily declines as student credentials go up, and this is consistent with the mismatch hypothesis.

<sup>30</sup> Barnes, *supra* note 1, at 1807.

<sup>31</sup> Even in the absence of mismatch, Barnes's model shows blacks having worse outcomes than whites. This is probably because the selection bias in Barnes's model is worse for whites than it is for blacks. Whites with low credentials who are admitted to law school are more likely to have unusually

Barnes's corrected simulation of a law school regime without affirmative action produces essentially the same number of black lawyers as a regime with affirmative action.<sup>32</sup> That is, the number of black lawyers in Barnes's "no-affirmative-action" scenario remains essentially constant even though black matriculations fall by 21.8%. This result implies that, under Barnes's no-affirmative-action model, the proportion of black law students who successfully become lawyers goes up by 28%. Moreover, the number of black law students who fail to become lawyers drops by 55%.<sup>33</sup> Although Barnes does not dispute these numbers, she does argue that these higher success rates are irrelevant to the mismatch hypothesis. We find this argument puzzling because a higher success rate under a no-affirmative-action regime is the central prediction of the mismatch hypothesis. In fact, her finding that higher success rates cancel out the effect of lower matriculation numbers rates is only possible if there *is* a mismatch effect. A reform that produces the same number of black lawyers while dramatically reducing the number of blacks who try but fail to become lawyers would seem to be big news indeed. But Barnes completely dismisses it.

#### IV. A FEW OBSERVATIONS ON METHODOLOGY AND IMPLEMENTATION

In this Response, we have focused on Barnes's original model and what results that model generates when computed correctly. Sometimes, important social science debates get caught in an imbroglio of competing models with advocates on each side championing a particular way of analyzing the data. It is important to show that the model of this particular critic of the mismatch effect does, in fact, produce results strongly consistent with mismatch.

Nonetheless, we do not want to leave the impression that we agree with the assumptions of Barnes's basic model or that we believe it is the best

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positive unobservable characteristics than blacks with similar observable credentials because those characteristics would have accounted for their admission. Blacks with low credentials, in contrast, are likely to be admitted to relatively elite schools in pursuit of affirmative action goals. Low-credential whites will therefore appear to outperform low-credential blacks. Sander's original paper controlled for other student characteristics, and his regressions predicting graduation and bar outcomes showed no negative "black" effect. Sander, *supra* note 2, at 439, 444.

<sup>32</sup> Barnes, *supra* note 7, at 809 tbl.7.

<sup>33</sup> For her simulation, Barnes takes the pool of BPS underrepresented minority students (URMs) and drops the 14% with the lowest credentials. In doing this, she claims she is simply following Sander, who in turn used Linda Wightman's 2003 finding that, without affirmative action, 14% fewer blacks would matriculate. See Sander, *supra* note 2, at 473 (citing Linda F. Wightman, *The Consequences of Race-Blindness: Revisiting Prediction Models with Current Law School Data*, 53 J. LEGAL EDUC. 229, 243 tbl.7 (2003)). In applying the 14% figure to URMs as a whole, Barnes actually drops more than 400 blacks from the BPS data, which is over 21% of the blacks in the sample. Barnes's simulation means that 1141 out of the 1871 blacks in the BPS dataset become lawyers with affirmative action whereas 1134 out of 1463 blacks become lawyers without affirmative action. The overall number of black students who fail to become lawyers thus falls from 730 to 329.



way to study mismatch issues. We offer here a few comments on weaknesses in her methodology and modeling process.

Barnes noted in her original essay that “selection bias” is an important problem when testing the mismatch theory with limited information on students.<sup>34</sup> Students with LSAT scores of 150 and UGPAs of 3.3 who attend elite law schools probably have other unobserved qualities, such as writing ability, leadership skills, or degrees from elite undergraduate colleges, that make them academically stronger than students with the same LSAT scores and UGPAs who attend less elite law schools. That is why the elite students were accepted into their elite law schools in the first place. Failure to control for these “unobservables” biases the analysis against finding a mismatch effect because it treats elite students with strong unobservables as if they were interchangeable with non-elite students with weaker unobservables. Researchers on both sides of the mismatch debate acknowledge that the selection bias problem is the largest hurdle to clear in answering questions about the mismatch hypothesis.<sup>35</sup> But Barnes’s analytic framework makes no effort to correct for selection bias. Our own research shows that when one more effectively controls for selection bias, mismatch effects are larger and affect a larger spectrum of students.<sup>36</sup>

Barnes makes other errors in setting up her models in her original essay. She defines well-paying jobs for law graduates as those paying over \$40,000 per year, but \$40,000 per year is not the cutoff point she uses in her model. Her descriptive statistics about the job market, as captured by the BPS dataset, also contain a number of basic errors.<sup>37</sup> The BPS sought job market information from only a subsample of the original respondents, but Barnes did not use sampling weights to obtain a representative sample before conducting her analysis.<sup>38</sup> She is modest about what can be deduced about mismatch effects from this data, but we view her job market results as too compromised to be of any use.<sup>39</sup>

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<sup>34</sup> Barnes, *supra* note 1, at 1807.

<sup>35</sup> See Jesse Rothstein & Albert H. Yoon, *Affirmative Action in Law School Admissions: What Do Racial Preferences Do?*, 57 U. CHI. L. REV. 649 (2008); Sander, *supra* note 2, at 418–25; Williams, *supra* note 3, at 11.

<sup>36</sup> See Williams, *supra* note 3, at Part VII.

<sup>37</sup> For example, Barnes writes that 15.1% of BPS respondents reported earnings of \$40,000 or more. Barnes, *supra* note 1, at 1775. The correct number is 35%.

<sup>38</sup> See *id.* Barnes notes the potential for nonresponse bias but does not characterize how such bias is likely to affect her results. Specifically, because students who experience worse outcomes are less likely to respond, a fact reflected in the data, nonresponse bias is likely to skew the results in Barnes’s job market analysis upward.

<sup>39</sup> There are other difficulties in using the BPS jobs data: for example, respondents are often reporting their earnings before they have learned their bar results. If mismatch causes low-credential graduates from elite schools to disproportionately fail the bar exam, these students will disproportionately see a reduction in their earnings. There are also high nonresponse rates on the jobs questions, which should be carefully analyzed when using the data. Barnes’s revision suggests that correcting her original

Barnes concludes in her correction that the BPS dataset simply has too many weaknesses to permit a robust analysis of mismatch issues.<sup>40</sup> We agree that more and better data on the law school mismatch issue is very important. All datasets have their limitations, but the BPS has great virtues nonetheless. The task of social scientists is to design models that overcome the weaknesses of data, to explore the power of their results by presenting alternative models and conducting sensitivity analyses, and to make their work transparent enough that lay readers can evaluate the results and experts can replicate them.

#### CONCLUSION

In the conclusion of her original essay, Barnes stated: “Although I am cautious about drawing conclusions from the results due to significant data limitations, the results suggest that mismatch does not occur. Instead, the data suggest that reverse mismatch—lower credentialed students learn more when challenged by classmates who outmatch them—may be occurring.”<sup>41</sup> As we have shown, this conclusion cannot be supported by either our replication or Barnes’s revision. To the extent that her model tells us anything about the issues at hand, it is exactly opposite to the conclusions of her original essay. Low-credential students have better, not worse, outcomes at schools where their credentials are closer to their peers; white students are affected by mismatch as much as black students; and Barnes’s corrected simulation suggests that, in the absence of any affirmative action, the number of black and Hispanic lawyers would not change whereas the number of unsuccessful minority students would drop precipitously.

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errors in her jobs analysis leaves her findings unchanged, but her analysis still ignores many problems with the data. *See* Barnes, *supra* note 7.

<sup>40</sup> *Id.* at 812.

<sup>41</sup> Barnes, *supra* note 1, at 1807.

TABLE 1: OUTCOMES FOR WHITES OF VARYING CREDENTIALS AT FOUR TIERS OF LAW SCHOOL ELITENESS<sup>42</sup>

<i>Percentile of Student Credentials &amp; Law School Tier</i>	<i>Probability of Graduating</i>			<i>Probability of Passing the Bar</i>		
	Barnes 2007	Barnes Revised	Our Replication	Barnes 2007	Barnes Revised	Our Replication
Fixed student credentials at 5th percentile						
Historically Black Schools	79.2%	91.3%	90.7%	12.9%	77.9%	76.9%
Low-Range Schools	72.0%	80.7%	75.6%	46.8%	71.4%	75.6%
Mid-Range Schools	83.3%	85.4%	82.7%	63.0%	73.7%	75.1%
Top 30 Schools	88.6%	86.2%	81.9%	64.7%	64.2%	53.0%
Fixed student credentials at 10th percentile						
Historically Black Schools	82.4%	91.8%	91.9%	27.0%	79.3%	82.4%
Low-Range Schools	77.4%	82.8%	81.8%	58.7%	74.4%	82.1%
Mid-Range Schools	87.2%	86.4%	86.1%	73.8%	76.1%	82.0%
Top 30 Schools	91.6%	87.1%	85.8%	75.7%	68.2%	68.0%
Fixed student credentials at 25th percentile						
Historically Black Schools	87.9%	92.8%	92.7%	62.4%	84.3%	87.6%

<sup>42</sup> This table presents three versions of two different outcomes, derived from data on students in the LSAC Bar Passage Study, which tracked roughly 27,000 students who entered law school in 1991 and the five following years. The first outcome is law school graduation, reflected in the first three columns. The second outcome is passing a bar examination, reflected in the last three columns. Within each outcome, we report the results from Barnes's 2007 essay, *see supra* note 1, Barnes's revised results, *see Barnes, supra* note 7, and our own estimates as calculated by Roger Bolus and Doug Williams. Each number represents success rates in a particular outcome (e.g., a 76.9% success rate in passing the bar). The numbers are derived by first using the BPS to estimate logit models for graduation and bar passage and then using these logit model results to estimate outcomes for students who are at a particular point in the credential distribution and others who are attending a particular cohort of schools. As we discuss in the text, *supra* Part II, the revised Barnes results still differ from our own estimates because, we believe, Barnes is not faithfully replicating her original model.

NORTHWESTERN UNIVERSITY LAW REVIEW

Low-Range Schools	84.8%	90.5%	89.9%	71.2%	85.6%	86.0%
Mid-Range Schools	89.7%	90.7%	89.7%	80.3%	86.0%	89.3%
Top 30 Schools	94.3%	92.9%	91.8%	76.8%	86.5%	83.6%
Fixed student credentials at 50th percentile						
Historically Black Schools	91.6%	93.2%	93.7%	77.2%	87.7%	91.8%
Low-Range Schools	90.9%	93.4%	93.5%	78.2%	88.2%	84.6%
Mid-Range Schools	91.7%	91.6%	91.7%	84.8%	89.1%	92.5%
Top 30 Schools	96.0%	94.7%	95.2%	88.3%	91.6%	90.4%

TABLE 2: OUTCOMES FOR BLACKS OF VARYING CREDENTIALS AT FOUR TIERS OF LAW SCHOOL ELITENESS<sup>43</sup>

<i>Percentile of Student Credentials &amp; Law School Tier</i>	<i>Probability of Graduating</i>			<i>Probability of Passing the Bar</i>		
	Barnes 2007	Barnes Revised	Our Repl-ication	Barnes 2007	Barnes Revised	Our Repl-ication
Fixed student credentials at 5th percentile						
Historically Black Schools	66.3%	84.0%	83.0%	7.6%	66.0%	66.9%
Low-Range Schools	68.5%	78.6%	73.0%	36.9%	62.8%	66.3%
Mid-Range Schools	77.0%	79.2%	76.2%	49.5%	60.4%	62.5%
Top 30 Schools	88.5%	86.6%	82.3%	62.7%	59.6%	49.4%
Fixed student credentials at 10th percentile						
Historically Black Schools	70.9%	84.8%	85.0%	17.0%	67.8%	74.1%
Low-Range Schools	74.4%	80.8%	79.8%	48.6%	66.2%	74.5%
Mid-Range Schools	82.2%	81.0%	80.6%	61.8%	63.3%	71.5%
Top 30 Schools	91.6%	87.4%	86.1%	74.1%	63.7%	64.8%
Fixed student credentials at 25th percentile						
Historically Black Schools	79.0%	86.7%	86.5%	48.0%	74.7%	81.1%
Low-Range Schools	82.6%	89.8%	88.6%	62.2%	80.0%	79.6%
Mid-Range Schools	85.4%	86.8%	85.4%	70.1%	76.9%	82.2%
Top 30 Schools	94.3%	93.0%	92.0%	82.6%	84.0%	81.6%
Fixed student credentials at 50th percentile						
Historically Black	84.9%	87.4%	88.1%	65.2%	79.6%	87.1%

<sup>43</sup> This table is identical to Table 1 except that it reports estimates for blacks rather than whites. See *supra* note 42 for details.

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Schools						
Low-Range Schools	89.4%	92.6%	92.6%	70.3%	83.4%	77.7%
Mid-Range Schools	88.1%	88.0%	87.9%	76.1%	81.6%	87.2%
Top 30 Schools	95.9%	94.9%	94.9%	87.3%	89.9%	89.1%

TABLE 3: SUMMARY OF OUR RESULTS FROM BARNES'S 2007 MODEL<sup>44</sup>

Percentile of Student Credentials & Law School Tier	Proportion of Whites Who:			Proportion of Blacks Who:		
	Graduate (s.e.)	Pass a Bar Exam (s.e.)	Become a Lawyer (s.e.)	Graduate (s.e.)	Pass a Bar Exam (s.e.)	Become a Lawyer (s.e.)
Fixed student credentials at 5th percentile						
Historically Black Schools	90.7%* (2.6%)	76.9%*** (4.2%)	70.3%*** (4.2%)	83.0% (2.9%)	66.9%** (4.2%)	56.6%** (4.1%)
Low-Range Schools	75.6% (3.8%)	75.6*** (4.1%)	56.1%* (4.5%)	73.0% (5.5%)	66.3%* (6.5%)	47.1% (6.3%)
Mid-Range Schools	82.7% (1.5%)	75.1%*** (2.0%)	61.4%*** (2.1%)	76.2% (1.8%)	62.5%* (2.5%)	48.0% (2.2%)
Top 30 Schools	81.9% (4.2%)	53.0% (7.4%)	42.3% (6.4%)	82.3% (4.0%)	49.4% (6.9%)	40.4% (5.9%)
Fixed student credentials at 10th percentile						
Historically Black Schools	91.9%* (2.1%)	82.4%*** (3.2%)	76.2%*** (3.4%)	85.0% (2.7%)	74.1%* (3.7%)	63.8% (3.8%)
Low-Range Schools	81.8% (2.3%)	82.1%*** (2.2%)	67.2%** (2.6%)	79.8% (5.0%)	74.5% (6.1%)	58.7% (6.4%)
Mid-Range Schools	86.1% (1.0%)	82.0%*** (1.2%)	70.2%*** (1.4%)	80.6% (1.5%)	71.5% (2.0%)	57.8% (1.9%)
Top 30 Schools	85.8% (2.5%)	68.0% (4.0%)	57.7% (3.9%)	86.1% (2.5%)	64.8% (4.0%)	55.7% (3.9%)
Fixed student credentials at 25th percentile						
Historically Black Schools	92.7% (2.0%)	87.6% (2.7%)	80.6% (3.2%)	86.5% (3.6%)	81.1% (3.9%)	69.6% (4.5%)
Low-Range Schools	89.9% (1.0%)	86.0% (1.2%)	77.4% (1.3%)	88.6% (3.5%)	79.6% (5.8%)	70.4% (6.1%)
Mid-Range Schools	89.7%* (0.5%)	89.3%*** (0.5%)	80.2%* (0.6%)	85.4%*** (1.3%)	82.2% (1.5%)	70.2%* (1.7%)

<sup>44</sup> The top number in each cell is the predicted proportion of students who will have the stated outcome, controlling for the student's race, credential level, and law school tier. Thus, in the cell at the upper left, Barnes's model estimates that 90.7% of whites attending historically black law schools who have credentials that place them at the fifth percentile of credentials in the BPS sample will graduate. Below each proportion is the standard error, estimated by standard bootstrap methods. For each estimate, we report whether the difference between a given tier and the top 30 tier outcome is statistically significant and mark positive results according to the legend at the bottom of the table. For definitions of the three outcomes, see *supra* Part II.

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Top 30 Schools	91.8% (1.0%)	83.6% (1.5%)	76.9% (1.6%)	92.0% (1.4%)	81.6% (2.3%)	75.4% (2.5%)
Fixed student credentials at 50th percentile						
Historically Black Schools	93.7% (2.1%)	91.8% (2.6%)	85.8% (3.3%)	88.1% (4.3%)	87.1% (4.4%)	76.8% (5.3%)
Low-Range Schools	93.4% (1.1%)	84.6%*** (1.9%)	79.2%*** (2.0%)	92.6% (2.7%)	77.7% (6.7%)	72.5%* (6.1%)
Mid-Range Schools	91.6%*** (0.3%)	92.5%*** (0.3%)	84.8% (0.4%)	87.9%*** (1.2%)	87.2% (1.3%)	76.4%*** (1.6%)
Top 30 Schools	94.7% (0.4%)	90.4% (0.6%)	85.7% (0.8%)	94.9% (1.0%)	89.1% (1.5%)	84.7% (1.8%)
* $p < .1$ ; ** $p < .05$ ; *** $p < .01$						