UNPACKING THE BAR: OF CUT SCORES, COMPETENCE AND CRUCIBLES

Gary S Rosin, South Texas College of Law
UNPACKING THE BAR: OF CUT SCORES, COMPETENCE AND CRUCIBLES

Gary S. Rosin
South Texas College of Law
grosin@stcl.edu

Abstract

Bar passage rates of first-takers vary widely among both the states and the law schools. State grading practices also vary widely, particularly as to minimum passing scores (“cut scores”) and whether they scale state exam components to the MultiState Bar Exam (“MBE”). The broad ranges of Bar passage rates and of state grading practices call into question the stewardship of the states over admission to the practice of law. This study uses generalized linear modeling, with a logit link function, to isolate the effect on the Bar passage rates of ABA-approved law schools of three factors: (i) the LSAT scores of entering classes, (ii) state cut scores; and (iii) scaling to the MBE. LSAT scores of a law school’s entering classes were the most significant factor in determining its Bar passage rate. But differences in state cut scores, and in MBE scaling, are associated with large differences in the Bar passage rates of law schools with equivalent LSAT scores. This suggests that the states need to work together with a view to reaching a national consensus as to the elements of lawyer minimum competence, and in how best to measure them.
I. INTRODUCTION

The primary purpose of the Bar exam is to ensure the minimal competence of persons admitted to the practice of law. Twice each year, the various states test candidates for admission to the Bar in the crucible of the Bar exam. Yet a candidate’s chances of passing the Bar exam vary widely from state-to-state. For example, for the Summer 2001 administrations of the various state Bar exams, the overall passage rate for all first-takers was 79%, but ranged from 70% (California and Maine) to 97% (Utah). Even among first–takers from ABA-accredited law schools, who had an overall passage rate of 81%, ranged from 38% (Western State University) to 100% (University of South Dakota).
Yet it is far from clear what such differences in group Bar passage rates mean. It is clear that academic qualifications—law school GPA and LSAT—are the primary factors that affect an individual’s relative performance on the Bar. Differences in aggregate state Bar passage rates may also reflect differences in state grading practices. For example, in Summer 2001, the Bar exam minimum passing scores (“cut scores”) set by the states ranged from 118 (South Carolina) to 150 (Nevada) out of 200, with a median of 133. For Summer 2001, slightly under half of the states, 24 out of 52, scaled state Bar exam components to the Multistate Bar Exam (“MBE”). Differences in law school aggregate passage rates may reflect anything from the mean entering academic qualifications of each school’s Bar candidates, to the states in which graduates took the Bar exam.

Justice Brandeis famously observed that federalism allows each state to “serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.” If the states are the laboratories of federalism, the Bar exam is the crucible the states use as they experiment with concepts of minimal competence. Justice Brandeis argued that, as in physical science, experimentation in social and economic sciences would lead to “advances and discoveries.” Yet experimentation among the states has not yet led to a consensus as to the elements of minimum competence to practice law, or of how to measure them.

The broad ranges of Bar passage rates and of state grading practices call into question the stewardship of the states over admission to the practice of law. This study uses generalized linear modeling, with a logit link function, to isolate the effect on the Bar passage rates of ABA-approved law schools of three factors: (i) the LSAT scores of entering classes, (ii) state cut scores; and (iii) the scaling of state exam components to the MBE. LSAT scores of a law school’s entering students were the most significant factor in determining its Bar passage rate. But differences in state Bar exam cut scores, and in MBE scaling, are associated with large differences in the Bar passage rates of law schools with equivalent LSAT scores. This suggests that the states need to work together with a view to reaching a national consensus as to the elements of lawyer minimum competence, and in how best to measure them.
II. BAR EXAM STRUCTURE AND GRADING PRACTICES

Although most states now use the centrally graded Multistate Bar Examination (“MBE”), they also administer and grade at least one other examination component, such as an essay examination. Each state sets its own method for combining component scores into a final score, as well as its own minimum cut score for passing the Bar. As a result, state Bar passage rates are not directly comparable. Differences in Bar passage rates among the states may indicate almost anything, from the relative quality of the candidate performances, to the relative difficulty of essay components, to the relative strictness of some or all of the essay graders, to the relative cut scores.

A. The Structure of Bar Exams

Most commonly, state Bar examinations have two components. Most states require candidates to take the Multistate Bar Exam (“MBE”), but also administer one or more separate components. Most states use an essay component. Some states also use the Multistate Performance Test (“MPT”).

The MBE is developed, scored and graded by the National Conference of Bar Examiners (“NCBE”). The MBE is a six-hour test that consists of 200 objective questions covering Constitutional Law, Contracts, Criminal Law and Procedure, Evidence, Real Property, and Torts. The essay component of a state Bar examination generally consists of several essay questions covering various aspects of law, and is administered over one to two days. Each state’s essay component is developed, scored and graded by the Bar examiners for that state. Some states have begun supplementing, or replacing, the state essay component with the Multistate Essay Examination (“MEE”). The MEE is developed by the NCBE, but scored and graded by the states. The MPT is designed to test the candidate’s ability to apply sample laws to a hypothetical set of facts and laws. Like the MEE, the MPT is developed by the NCBE, but graded and scored by the states.

After each exam components have been assigned a score, the component scores are combined into a final score. The weight assigned to the components varies among the states.
B. MBE Scaling of Component Scores

A perennial problem in testing and measurement is assuring that test scores represent a consistent measure of performance. To ensure that variations in scores arise out of changes in the level of performance, rather than out of differences in the difficulty of questions, or in the standards used in grading essay questions, the NCBE converts a candidate’s raw score (the number of questions correctly answered) into a scaled score. On each administration of the MBE, the NCBE includes some reference questions from prior administrations. Statistical measures are used to compare the current candidates’ collective performance on the reference questions with that of candidates on earlier administrations of those questions. The raw scores of the current candidates are then adjusted to obtain the scaled, or final, score on the MBE.

State Bar examination components (essay, MPT, etc.) have the same issues: are differences in candidate scores on a certain component due to differences in performance? For example, the current set of essay questions may be easier or harder than those in earlier administrations. Alternatively, the current set of graders (or some of them) may be using higher or lower standards of performance. Too eliminate such problems, a number of states scale the total raw scores on state exam components by using the scaled scores of their candidates on the MBE. Statistical tests are then used to compare the collective performance of the candidates on that state component to that on the MBE. The raw scores of that component are then adjusted to obtain the scaled component score. Only then are the MBE scaled scores and the other component scaled scores combined to determine the final score on the exam.

C. Compensatory and Non-Compensatory Grading

Another way in which Bar exams vary among the states is whether a candidate’s pass/fail status is determine solely on the basis of the combined, total, score (compensatory grading), or whether a candidate must also pass one or more of the separate components of the state’s Bar exam. For the Summer 2001 Bar exam, 80% of the states used compensatory grading.
D. Cut Scores

When all is said and done, the most visible variant state grading practice is the Bar exam minimum passing scores (“cut scores”) set by the various states. Using the MBE’s 200-point scale, the Summer 2001 cut scores ranged from 118 (South Carolina) to 150 (Nevada) out of 200, with a median of 133. That is, cut scores ranged from 59% to 75%, with a median of 66.5%.

The problem is that the choice of cut score not only does not relate to minimum competence, but often has no empirical basis. For example, moving to MBE scaling is often a two-stage process. First, the state selects a cut score that yields an overall Bar passage rate equivalent to its recent passage rates. Later, the state commissions a “standard-setting” study to recommend a new cut score.

III. Empirical Analysis

A. Prior Studies

Prior Bar passage studies and law-school ranking systems do not adequately address the problems inherent in comparing law schools on the basis of Bar passage rates. Often they disregard the problem altogether, and use only unadjusted Bar passage rates. While others recognize at least some of the problems, not only do they adjust for only academic qualifications or state variations, but not both, but also use an adjustment methodology that limits the usefulness of their results.

1. LSAC National Longitudinal Bar Passage study

Perhaps the most well-known Bar passage study is the LSAC National Longitudinal Bar Passage Study (“LSAC Study”), conducted by the Law School Admissions Council. The LSAC Study analyzed Bar exam results for over 23,000 students who were admitted to U.S. law schools in Fall 1991, and who, at least once, sat for the bar in a U.S. jurisdiction. Through surveys, reports from participating states and law schools, and published lists of persons passing the Bar, the LSAC study had almost unprecedented access to a wide variety of information about participating candidates: (i) pre-law and law
academic performance; (ii) ethnic and other demographic and socioeconomic data; and (iii) Bar jurisdiction and outcome, including scores and pass-fail status.45

While the LSAC Study produced important results as to the importance of law school GPA, LSAT, law school attended and ethnicity on Bar passage, its results are not particularly helpful for purposes of this study. First, its approach was candidate-centered, rather than law-school centered. That is, it focused on factors affecting an individual candidate’s chances of passing the Bar. The LSAC Study did not analyze the factors affecting a law school’s Bar passage rate.

Second, to the extent that law school attended was included as a factor in individual Bar passage, law schools were not considered separately, but were grouped together. Using a statistical technique called cluster analysis, the LSAC Study grouped law schools into six “clusters” based on a combination of factors: (i) tuition; (ii) enrollment; (iii) selectivity; (iv) percent minority; (v) faculty/student ratio; (vi) median LSAT; and (vii) median undergraduate GPA.46 The primary analytic tool of interest was the use of indicator, or “dummy,” variables for each law-school cluster (except for cluster 3).47 A logistic regression showed that law school attended had statistically significant effect of on the candidate’s probability or odds of passing the Bar—at least when the candidate attended a law school in Clusters 2, 5 or 6, rather than in Cluster 3.48

Third, the LSAC Study aggregated data across states, and did not consider the effect of State Bar exam practices on Bar passage.49 Instead, the LSAC Study noted differences in state passage rates, and presented three charts comparing mean adjusted law school GPA, LSAT and MBE scaled-scores of persons who passed and who failed each state’s Bar.50 The LSAC Study noted that further study was complicated by differences in Bar exam structure, Bar grading practices and academic qualifications of the candidates.51 Those differences are at the heart of this study.

2. Texas 2004 Study

In 2002, the Texas Government Code was amended to direct the Texas Board of Law Examiners to prepare a report on the July 2004 Texas Bar exam that analyzed Bar passage (or rather, failure)
“aggregated by gender, ethnicity, and race.” The result was a December 2004 report by Drs. Stephen P. Klein and Roger Bolus (“Texas 2004 Study”) that addressed group differences in bar performance according to gender, ethnicity and Texas law school attended. As in the LSAC Study, Klein and Bolus had almost unprecedented access to the scores of candidates, as well as to level of preparation for the Bar, law school attended, and academic qualifications—LSATs, undergraduate GPAs and law GPAs.

The Texas 2004 Study differs from the LSAC Study in two major respects: (i) its focus on group results; and (ii) its use of exam final scores, rather than pass/fail outcomes. Of particular interest for purposes of this study is the finding by Klein and Bolus that “there is a nearly perfect relationship between a law school’s mean total bar examination scale score and its mean LSAT score (the correlation is .98 out of a possible 1.00)” This suggests that the overall performance of a law school’s candidates as a group is largely determined by the average entering academic credentials of that group. According to Klein and Bolus, despite the uncertainty in measurement of an individual’s LSAT, and the wide variation in subsequent performance in law school, those individual differences “almost entirely balance out when the data are analyzed by school.”

The usefulness of the Texas 2004 Study is limited by (i) the use of statistics for all takers from Texas law schools, rather than only first-takers, (ii) its focus on exam scores, rather than Bar passage rates, (iii) the unavailability of the law-school mean LSATs and mean Bar scores, and (iv) the limited information provided about the distribution of Bar scores about each school’s means. Mean Bar scores are relevant only to the extent that they can tell us something about Bar passage rates.

3. New York 2005 Study

In September 2004, the New York State Board of Law Examiners (“NYBLE”) decided to increase its cut score from 132/200 to 135/200, in three one-point steps. In February, 2006, the NYBLE, deferred further increases in the cut score, pending a study by the National Conference of Bar Examiners (NCBE) of the effect of the July 2005 one-point increase in cut score. Following the release
of that report in October 2006, the NYBLE deferred further increases in the cut score in the 2007 administrations of its Bar exam, pending further study by the NCBE.

The NCBE report on the July 2005 NY Bar Exam is largely descriptive, rather than analytical. That is, its focus is on describing the effect of current and proposed cut score increases on the average bar exam score, and the Bar passage rates, according to ethnicity and gender. Although data for ABA-approved law schools were available, the data were neither reported, nor analyzed, at the law-school level.

4. Use of Bar Passage Data in Law School Rankings

Bar passage data is widely used in reporting on, and in ranking, law schools. The existing ranking systems do not adequately address the problems inherent in ranking law schools on the basis of Bar passage rates. Two ranking systems, Judging the Law Schools and The Rankings Game, recognize at least some of the problems, and use adjusted Bar passage rates. Neither system adjusts for both academic qualifications and state grading practices. In addition, the methodologies used in the adjustment process limit the usefulness of both systems.

a) Judging the Law Schools

Judging the Law Schools recognizes that the quality of a law schools outputs (its first-taker Bar passage rate) should be judged in light of the quality of its inputs (the academic qualifications of its student body). Judging the Law Schools does not attempt to adjust for variations in state grading practices.

Using data drawn from the most recent edition of the Law-School Guide, Judging the Law Schools calculates a “quality index” for each law school based on the reported 75th percentile of the undergraduate GPAs and the 75th percentile of the LSAT scores of its entering students. The quality index is determined using the following formula:

Quality Index = 0.5 * (LSAT + 15 * GPA).
*Judging the Law Schools* then calculates a “Program Achievement Rating” (“PAR”) for each school by dividing its reported first-taker Bar passage rate by its quality index, and multiplying the result by 100.

Several aspects of the methodology of *Judging the Law Schools* limit its results: (i) the relative ranges of both the quality index and the PAR; (ii) the mismatching of inputs and outputs; (iii) the use entering class 75th percentiles of full-time students; and (iv) the use of combined Winter and Summer Bar results.

The quality index has a maximum of 120 (LSAT, 175 and GPA, 4.0), and a minimum of 75 (LSAT, 120 and GPA, 2.0). As applied, all but a very few law schools have a quality index below 100. As a result, the PAR for most schools is lower than their Bar passage rate. In fact, a school with a quality index of 120 (the maximum possible), could have a PAR no higher than 83.

*Judging the Law Schools* uses information drawn from the *Law-School Guide*, which includes for each law school data on relatively recent entering classes and relatively recent Bar results. For example, the 2005 edition of the *Law-School Guide* records the academic qualifications of the 2003 entering classes, and the Bar results from the *Summer 2002 and February 2003* bar exams. Obviously, the students who took those Bar exams did not enter with the 2003 entering class. For the PAR to accurately match inputs to outputs, the entering classes need to be lagged. For example, full-time students who took the Summer 2002 Bar probably entered in Fall 1999, while part-time students who took that Bar probably entered in Fall 1998, and perhaps earlier. Luckily, the *Law-School Guide* reports on full-time and part-time students separately.

This brings up a separate set of problems arising from the use of the *Law-School Guide*. First, until recently, the *Law-School Guide* reported full-time and part-time statistics, but did not provide statistics for the *entire* entering class. During that period, *Judging the Law Schools* appears to have used only the statistics for the *full-time* students. Now that the *Law-School Guide* also reports on the qualifications of the entering class as a whole, the Sixth Edition of *Judging the Law Schools* appears to be using the “total” 75th percentiles.
Second, while the *Law-School Guide* provides information about the range of academic qualifications of entering classes—the 75th and 25th percentiles—it does not provide information about the central tendency—the *mean* or the *median*—of academic qualifications. Information about both central tendency and range of academic qualifications may be relevant in determining the distribution of Bar exam scores, and thus, Bar passage rates.

The last quirk in the methodology of *Judging the Law Schools* is the Bar passage rate that it uses. For each law school, the *Law-School Guide* reports three different first-taker Bar passage rates: (i) the rate on the Summer Bar; (ii) the rate on the following Winter Bar; and (iii) an overall rate on both Bars combined.81 *Judging the Law Schools* uses the overall/combined rate. The problem is that first-taker passage rates on Winter Bars are consistently lower than on Summer Bars (the “February Effect”).82 The reasons for the February Effect are not entirely clear. Moreover, for many, if not most, schools, the number of first-takers taking Winter Bars is much lower than those taking Summer Bars. With smaller sample sizes, a school’s Winter results are often much more volatile that its Summer results.

b) The Rankings Game

*Judging the Law Schools* adjusts first-taker Bar passage rates only for academic qualifications. *The Rankings Game*,83 takes the opposite approach, and adjusts only for State variations in overall Bar passage rate.84

*The Rankings Game* also bases its rankings on the *Law-School Guide*.85 *The Rankings Game* reports a school’s Bar passage rate in its reporting state86 relative to overall first-taker Bar passage in that state. It does this by dividing each school’s passage rate by the overall first-taker State passage rate.87 A school’s adjusted Bar passage rate is a decimal that shows whether the school’s first-taker passage rate is above or below the state first-taker passage rate.88 The adjusted passage rates also show the degree to which the school’s Bar passage rate departs from the State average. For example, an adjusted bar passage rate of 0.83 is 17% below the average, while an adjusted bar passage rate of 1.25 is 25% above the average.
To a certain extent, this procedure offsets the effect of differing state grading practices. As discussed later in this Article, cut scores have a nonlinear effect on passage rates. Also, The Rankings Game does not adjust for differing academic qualifications.

B. Data Scope, Sources and Coding

In designing this study, it was necessary to limit its scope in several respects. First, it focuses only on (i) ABA-approved law schools, and (ii) those that have the majority of students sit for the Bar in the state in which the law school is located. Second, it uses only first-taker Bar passage rates, as reported in the 2004 edition of the Law-School Guide to ABA-Approved Law Schools (“Law-School Guide”). Third, it uses the reported LSAT scores of a law school’s entering classes as a proxy for the entering qualifications of its exiting class—the students that sit for the Bar for the first time. Fourth, it focuses only states that used compensatory grading on its Summer 2001 Bar exam.

1. Data Availability

In an ideal world, a study such as this would have ready access to all the academic qualifications (LSAT, undergraduate GPA, law school attended and law school GPA), the Bar exam scores, and the state in which the exam was administered, for each individual who took a particular administration of the various state Bars. To the extent the focus is, as here, on group performance, data as to the relevant groups to which each individual belonged would also be available.

The problem is that it is very difficult, and costly, to collect such data. Everyone involved, from Bar candidates, to law schools, to states, have an interest in keeping such matters confidential. Witness, for example, the steps taken to ensure confidentiality taken in the Texas 2004 Study.

On the other hand, many states publish the first-taker Bar passage rates of local law schools. In addition, the Law-School Guide lists, for each ABA-approved law school, recent first-taker Bar passage rates for the state in which the largest number of a law school’s graduates took the Bar exam. Similarly,
for each ABA-approved law school, the Law-School Guide also lists the academic qualifications of a recent entering class.94

2. First-taker Bar Passage Rates.

As suggested by Dr. Wightman in the LSAC Study, the key issue in Bar passage studies is entry into the profession.95 From that perspective, a candidate is interested in passing the Bar exam. Potential law students, law schools, and society at large, are primarily interested in identifying the factors that affect the chances of passing the Bar. From that perspective, the key statistic is the Bar passage rate of the various subgroups—the proportion of each subgroup that have passed the Bar. Mean Bar scores are relevant only to the extent that they can tell us something about Bar passage rates.

When states publish information about Bar results, they often segregate the statistics for first-takers and those for repeaters.96 Although the overall statistics may be of passing interest, the focus of interest—the “headline” number—is first-taker Bar passage rates, and how each law school’s Bar passage rate for first-takers compares to (i) the combined passage rate for first-takers from all local law schools (the “state average”),97 and (ii) the first-taker passage rates for each of state law school. Similarly, the Law-School Guide98 and reports only first-taker Bar passage rates.

Dr. Wightman is correct in noting that eventual Bar passage rates reflect ultimate entry into the profession.99 But for first-failers, the ability to persist in retaking the Bar, perhaps multiple times, is a key factor in eventual Bar passage.100 More practically, neither the states nor the Law-School Guide collect and report on eventual Bar passage.

Data on Bar first-takers were taken for the Summer 2001 Bars, as reported by the Law-School Guide (2004 ed.) Again, law schools were asked to report the number of first-takers (“BarNum”), and their Bar passage rate (“Bar”), in the state in which the largest number of their graduates took the Bar exams.101 This study used the results from that state’s Summer 2001 Bar exam, but only if the law school was located in that state.102
3. Academic Qualifications

This study focuses on the LSAT profiles of entering classes, but not on the undergraduate GPA profiles of those classes. The grading practices of the various undergraduate institutions vary widely, as do the entering academic profiles of their students. As a result, undergraduate GPAs only measure, at best, the relative strength of students within an undergraduate institution, but not across institutions. On the other hand, the LSAT is a more universal method of determining the academic preparation of entering law students.

Ideally, the academic qualifications of the candidates from each law school that took the Summer 2001 Bars would be directly available, as they were in the LSAC Study and the Texas 2004 Study. Most researchers do not have ready access to such information, at least as it pertains to law schools other than one with which they are associated. As does Judging the Law Schools, this study relies on the academic qualifications of law school entering classes as a proxy for those of the candidates. In contrast to Judging the Law Schools, this study attempts to match entering class qualifications more closely to the Summer 2001 candidates.

Most students who graduated at the end of the Spring 2001 semester took the Bar that Summer. Assuming a customary three academic year program, full-time students would have entered in Fall 1998. Data for Fall 1998 entering full-time students were taken from the 2000 edition of the Law-School Guide. By definition, part-time students who took that same Bar would have taken longer to finish law school, and so would have entered law school in an earlier semester. To simplify analysis, I assumed that part-time students took four academic years to graduate, and so entered in Fall 1997. Data for Fall 1997 entering part-time students were taken from the 1999 edition of the Law-School Guide. For both full-time and part-time students, the data entered included the number of entering students of that category for the Fall semester of the applicable year, as well as the 75th and 25th LSAT percentiles of those students. For measures of the central tendency of each group, the study derived the “midhinges” by averaging the 75th and 25th percentiles for that group.
Blending the full-time and the part-time academic qualifications was another matter. The overall mean of a group is the same as the weighted average of the means of the various subgroups that compose it. To the extent that midhinges approximate the means of each subgroup, the weighted average of the midhinges should also approximate the overall mean. On that reasoning, overall LSAT midhinges were derived by determining the weighted averages of the full-time and part-time midhinges. These weighted midhinges were used as proxies for the means for the “entering class” that took a Summer 2001 Bar.

4. State Grading Practices

A primary focus of this Study is the effect of state cut scores and MBE scaling practices on law school Bar passage rates. Where either the cut score or the scaling rules in force could not be determined for a state, that state, and its law schools, were not included. To reduce the state-related factors that might impact Bar passage rates, where a state did not use compensatory grading that state and its plurality law schools were not included in this study.

Information on state cut scores, MBE scaling, and compensatory grading, were derived primarily from the 2000 and 2002 Law-School Guide to Bar Admission Requirements (“Bar Admission Guide”). Where the 2000 and 2002 Bar Admission Guides were not consistent, the author attempted to determine the rules that were in effect in Summer 2001 in the affected jurisdiction. Unless such rules could be determined, that state, and its law schools were excluded.

This study used an indicator variable for MBE scaling, which was coded “1” if the state used that practice, and coded “0” if it did not.

C. Descriptive Statistics

Table 1 shows the differences in means of Cut Score, LSAT and Bar between law schools in states that scale Bar scores to the MBE, and those that do not. While that table shows differences in the means between schools in scaled and states that did not scale, only the difference for Cut Score
(p=0.027) was significant at the 0.05 level. The higher mean cut score in states that scale scores might account for the lower Bar passage rates for the law schools in those states.

[Insert Table 1 about here]

Table 2 is somewhat more illuminating, especially as to the relative distributions of Cut Scores in scaled and states that did not scale. Although the 25\textsuperscript{th} and 50\textsuperscript{th} Cut-Score percentiles were fairly close, the distributions differ at the upper end. Both the 75\textsuperscript{th} and 90\textsuperscript{th} percentiles of Cut Score in states that did not scale are about 6 points less than the equivalent percentiles in states that scale. For the LSAT, the 25\textsuperscript{th}, 50\textsuperscript{th} and 75\textsuperscript{th} percentiles in states that scale were one to two points below those in states that did not scale. Given the lower distribution of LSAT, and the higher distribution of Cut Score in states that scale, it should come as no surprise that the distribution of Bar passage rates in those states was also lower than in states that did not scale.

[Insert Table 2 about here]

D. Correlation Analysis

Because generalized linear modeling of Bar passage will use a logit\textsuperscript{112} link function, correlation analysis tested the strength of the relationships between Cut Score and LSAT, on the one hand, and Logit(Bar), on the other hand. The effect of MBE Scaling on Logit(Bar) was tested via three separate correlation analyses of the other predictor variables against Logit(Bar): one using all law schools; another using only law schools in states that scaled; and another using only law schools in states that did not scale.

[Insert Table 3 about here]

As shown in the “Total” column of Table 3, for all law schools, the absolute value of the correlation coefficient of LSAT against Logit(Bar) was higher than that of Cut Score.\textsuperscript{113} A comparison of the correlation coefficients for only law schools in states that scaled (“Scaled”) and those for states that did
not (“Not Scaled”) reveals an interesting pattern: the correlation coefficients for each of LSAT and Cut Score were slightly larger in states that did not scale than in states that scaled.

[Insert Table 4 about here]

Controlling for LSAT, the partial correlations of Cut Score with Logit(Bar) are shown in Table 4. Both overall, and for each subset, the partial correlation coefficients were statistically significant (p < 0.01). Note that the absolute value of correlation coefficient for states that scaled was more than three times that for states that did not scale.

E. Results of Generalized Linear Modeling

The study used generalized linear modeling, with a logit link function. Building the generalized linear model followed a stepwise approach. The independent variables (or factors) were added to an intercept-only model in the order of their correlation, or partial correlation, coefficients with Logit(Bar): first LSAT, then Cut Score, and then MBE Scaling. Although only the final model will be discussed, the results of each step are summarized in Table 5:

[Insert Table 5 about here]

Table 6 shows the resulting model, with terms for the independent variables, LSAT, CutScore, and the interaction of Scaled, with a reference value of 1 (states that scale to the MBE), with each of LSAT and CutScore. The model was statistically significant (Likelihood Ratio Chi-Square test, p < 0.001). Similarly, the values of the intercept, and of all of coefficients for the independent variables were also statistically significant, (Wald Chi-square test, p < 0.01 or better).

[Insert Table 6 about here]

The model has two different forms, one for each level of the factor Scaled. In states that scaled (Scaled = 1), the terms for (Scaled=0)*LSAT and for (Scaled=0)*CutScore are not included in the model for Logit(Bar) [g(y)].

\[ g(y) = -0.08015 + 0.118 \times \text{LSAT} - 0.063 \times \text{Cut Score} \quad (\text{Scaled} = 1) \]
In states that did not scale (Scaled=0), the terms involving (Scaled=0) are included in the model:

\[
g(y) = -0.015 + (0.118 - 0.035) \times \text{LSAT} + (-0.063 + 0.040) \times \text{Cut Score}
\]

\[
= -0.015 + 0.083 \times \text{LSAT} - 0.023 \times \text{Cut Score} \quad (\text{Scaled} = 0)
\]

As for goodness of fit, the Pearson Chi-square test showed that the residuals of E(Bar) varied far more than would be expected by chance (p < 0.001). This indicates that a substantial amount of variance is not captured by the model, and may be due to the presence of latent variables. That being said, as shown by the Likelihood Ratio Index, the model reduced uncertainty by 42.7%. As shown by the value of R-square, the expected value of Bar passage rates accounted for 68.5% of the variance in actual bar passage rates (Bar).

F. Interpreting the Model

In interpreting the results of this study, the focus is not so much on fitted (expected) law-school Bar passage rates, as on the effects on those rates of changes in law-school LSAT mid-hinge (LSAT), Cut Score or MBE Scaling practices. That is, the focus is on the marginal cost (or benefit) of a change in one of those variables, while holding the others constant (the partial marginal cost/benefit). Such an approach seems appropriate to what might be called “An Age of Change,” of changes in state Cut Scores, and changes (or attempted changes) in the qualifications of the entering students of the various law schools.

While changes in law-school Bar passage rates were most sensitive to changes in entering student LSATs, both Cut Score and MBE scaling practices also had significant marginal effects on those rates. As a result, law schools with identical LSATs can experience dramatically different Bar passage rates, depending on state grading practices.

1. LSAT and Cut Score

In both states that scaled, and in those that did not, law-school Bar passage rates were much more sensitive to changes in LSAT than to changes in Cut Score. That said, the interaction between LSAT and
Cut Score that is inherent in the model of expected Bar passage rates resulted in different expected Bar passage rates among law schools with equivalent LSATs.

As shown in Table 7, both the expected odds of passing the Bar [Odds(Bar)] and the expected law-school Bar passage rate [E(Bar)] were only half (Scaled states), or a quarter (Not Scaled), as sensitive to changes in Cut Score than to changes in LSAT.

For any particular combination of LSAT, Cut Score and MBE scaling, the actual (as opposed to the relative) effect on expected Bar passage rates of a change in LSAT or in Cut Score, depends on the value of expected law-school Bar passage rate. The formula for expected law-school Bar passage rate is inherently exponential, and multiplicative, Not only is expected Bar passage rate a non-linear function of each of LSAT and Cut Score, but also, those variables interact in a nonlinear fashion. As a result, the effects of a change in Cut Score are greater for schools with lower LSATs.

Chart 1 applies the model, as it affects law schools in states that scale to the MBE. The horizontal axis shows different state cut scores. Each curve shows the effect of a change in cut score on expected Bar passage rates for law schools with the indicated law-school LSAT. The effect of a change in LSAT, without any change in Cut Score, can be roughly tracked by the intersection of the vertical gridline for a Cut Score with the various LSAT curves.

2. MBE Scaling

As shown in Table 7 (above), in states that did not scale, the expected odds of both Bar passage and the linear predictor were only about 70% as sensitive to increases in LSAT, and only about 37% as sensitive to increases in Cut Score, than in states that scaled.

Chart 2 compares the effect of a change in Cut Score and in LSAT by MBE scaling practices. Each curve represents the increase in fitted law-school Bar passage rates when Cut Score is decreased.
from 145 to 130. The ranges of cut score—130 through 145—and of LSAT—140 through 170—capture most, if not more than all, of the ranges of these variables. 123

[Insert Chart 2 about here]

As suggested earlier, law-school Bar passage rates in states that did not scale (Not Scaled) were much less sensitive to changes in either Cut Score or LSAT than those in states that scaled (Scaled). For states that did not scale, the effect of decreasing Cut Score from the top to nearly the bottom of its range, added no more than 8 percentage points to law-school Bar passage rates. For states that scaled, that same change in Cut Score added as much as 23 percentage points to law-school Bar passage rates. In addition, for almost any LSAT, the slope of the curve (the effect of a change in LSAT) is steeper for states that scaled than for states that did not scale.

IV. CONCLUSION

Data for 2006 administrations of the state Bar exams shows some progress in state grading practices. A much greater proportion of states are now scaling at least the total scores of major components. 124 Cut scores are converging somewhat towards 135. That being said, the range of cut-scores is still too great.

One of the justifications for increasing Bar exam cut score is a perceived decline in essay scores. 125 Because the purpose of scaling is to ensure that scores of Bar exam components represent a constant level of achievement, scaling is essential to ensure that impressions correspond to reality. 126 Scaling makes a Bar exam a more sensitive instrument. As such, scaling also enhances consistency and the appearance of fairness in Bar results. Yet for Summer 2001 Bar exams, only 47% of the states used MBE scaling. 127 For calendar year 2006 Bar exams, 67% of the states used MBE scaling. 128

Just as the last five years showed an increase in the number of states using MBE scaling, cut scores have also increased somewhat over that period (Table 8). 129 The overall range of cut scores have remained the about the same, from 119 to 150, and the mean cut score has increased only slightly, from
134.7 to 134.8. Yet the standard deviation fell markedly, from 5.9 to 4.9, largely due increases at the lower end of the 2001 distribution of cut scores.

[Insert Table 8 about here]

The number of states with cut scores of 135 almost doubled (from 6 to 11). The upper end of the distribution was largely unchanged. The 75th percentile increased slightly to 138. The 90th percentile fell back a point, to 141, but the 95th percentile remained 144.8—just above California’s 144.

While this substantial progress should be welcomed, the remaining one-third of the states should meet more fully their responsibilities under the *Joint Bar Standards.*

In setting cut scores, states should keep in mind the non-linear, and interactive, effects of various variables on law-school Bar passage rates. For any given cut score, Bar passage rates not only fall as law school LSAT falls, they fall at increasing rates. Moreover, raising the cut score magnifies this effect. This has significant implications for the States. The first is the importance of MBE scaling—and thus the MBE itself—in assuring that changes in Bar exam scores are due to differences in the quality of candidate performance. The second is the need to investigate the characteristics of low-LSAT law schools that might also affect Bar passage. The third, and perhaps the most important, is the need to reach a consensus as to baseline minimum competency and its measurement.
APPENDIX
GENERALIZED LINEAR MODELING WITH A LOGIT LINK FUNCTION

1. General

Generalized linear modeling is a method for regressing non-linear models. The dependent variable, referred to as “y”, is transformed using a link function, referred to as “g”. The transformed dependent variable, g(y), is then “regressed” against one or more independent variables, referred to here as “x_i”, using maximum likelihood, instead of least squares techniques. The general form of the linear portion of the models is

\[ g(y) = \beta_0 + \sum \beta_i x_i + \varepsilon \]  
(Formula 1)

One of the advantages of generalized linear modeling over a linear regression is that it does not require normal distributions of its dependent and independent variables.

Analysis of Bar passage rates used a logit link function and a binomial response function—the number of persons from a law school who passed (positive responses) when the Bar exam was administered to a given number of first-takers from that law school (subjects). The dependent variable in Formula 1, g(y), is linked to expected Bar passage rate [“E(Bar),” or “E(y)”] via the logit function:

\[ g(y) = \text{Logit}(\text{Bar}) = \ln(\frac{\text{E(Bar)}}{1-\text{E(Bar)}}) \]  
(Formula 2)

Generalized linear modeling generates the coefficients for the linear portion of the model—that is, the transformed value, Logit(Bar). The formula for expected Bar passage rate is the inverse logit, or logistic, transformation of the right-hand side of Formula 1:

\[ E(y) = \text{E(Bar)} = g^{-1}(\beta_0 + \sum \beta_i x_i + \varepsilon) \]

\[ = \frac{\exp(\beta_0 + \sum \beta_i x_i + \varepsilon)}{[1+\exp(\beta_0 + \sum \beta_i x_i + \varepsilon)]} \]  
(Formula 3)
2. Significance Testing & Goodness of Fit

The difference between a tested model and an intercept-only model was tested using the Likelihood Ratio Chi-Square statistic. The values of all intercepts and all coefficients were tested using the Wald Chi Square statistic.

Goodness of fit was tested in three ways. First, by using a Pearson Chi-Square statistic for the residuals of \(E(\text{Bar})\)—the differences between the predicted proportions passing and the measured proportions passing. Smaller values of the Pearson Chi Square indicate a better fit.

The second test of goodness of fit used the likelihood ratio index developed by Long. Though the likelihood ratio index is an equivalent to R-square, it does not translate to a percentage of variance explained. Rather, it is a measure of the proportion of the reduction in uncertainty in the model.

Last, goodness of fit was also tested via the square of a weighted correlation of the predicted proportion passing \(E(\text{Bar})\) and the measured proportion passing \(\text{Bar}\).

3. Interpreting Coefficients: The Marginal Costs of Variation

In interpreting results, the focus is not so much on fitted (expected) law-school Bar passage rates themselves, as on the effects on those rates of marginal changes in one of the dependent variables. That is, the focus is on the marginal cost (or benefit) of a change in an independent variable, while holding the others constant (the partial marginal cost/benefit).

In the linear portion of a generalized linear model, the coefficient \(\beta_i\) of each independent variable \(x_i\) represents the amount by which a one-point increase in the value of that variable changes the value of \(y\). With a logit link function, \(g(y)\) is the natural logarithm of the odds of passing. Thus, applying the exponential function to both sides of the linear portion of the model transforms it into a model for the odds of passing:

\[\text{Odds}(\text{Bar}) = \exp(\beta_0 + \sum_{i} \beta_i x_i + \varepsilon)\]  (Formula 4a)
One of the characteristics of exponentiation is that the exponential of a sum equals the \textit{product} of the exponential of each term in the sum.\textsuperscript{145} Formula 3a converts to the following \textit{multiplicative} model:

\[
\text{Odds(Bar)} = \exp(\beta_0) \prod \exp(\beta_i x_i) \cdot \exp(\epsilon) \quad (\text{Formula 4b})\textsuperscript{146}
\]

Under Formula 4b, for each independent variable \((x_i)\), the exponential of its coefficient, \(\exp(\beta_i)\), represents the \textit{proportionate} amount by which a one-point increase in the value of that variable changes the value of \text{Odds(Bar)}.\textsuperscript{147}

\[\text{[Insert Chart A-1 about here]}\]

In generalized linear modeling with a logit link function, analysis of the effect of a change in an independent variable generally stops with \text{Odds(Bar)}. Presumably, that is because the value of the first derivative—or first \textit{partial} derivative—of a logistic function,\textsuperscript{149} depends on the current value of the function. Chart A-1 shows the value of expected Bar passage rate, \(E(\text{Bar})\), for different LSAT scores, holding cut score and MBE scaling constant. Note that the function is not linear. Rather, it has the “S” shape that is characteristic of logistic functions. As shown in Chart A-1, the slope of the function is highest (most steep) at fifty percent (50%), and flattens out (decreases) to either side of fifty percent.

Where, as in Chart A-1, the linear portion of the model is purely linear as to all independent variables \((x_i)\), the partial first derivative of the expected Bar passage rate, \(E(\text{Bar})\), with respect to that variable is as follows:

\[
\left( \frac{\partial E(\text{Bar})}{\partial x_i} \right) = \beta_i \cdot E(\text{Bar}) \cdot [1 - E(\text{Bar})] \quad (\text{Formula 5})\textsuperscript{150}
\]

Thus, the \textit{actual} slope of, or rate-of-change in, \(E(\text{Bar})\) with respect to \(x_i\) depends on the value of \(E(\text{Bar})\).\textsuperscript{151} As a result, it has been suggested that \(\beta_i\) has “no intuitively simple interpretation."\textsuperscript{152} That being said, where a model has multiple independent, non-interactive, pure linear (first-order\textsuperscript{153}) sum of variables \((x_1, x_2, \ldots, x_n)\), \textit{at any particular combination of values} of the independent variables, the partial slopes of \(E(\text{Bar})\) which respect to those variables are \textit{proportional to} their respective coefficients \((\beta_1, \beta_2, \ldots, \beta_n)\).
That is, at any given Bar passage rate, the coefficients show the *relative sensitivity* of $E(\text{Bar})$ to each independent variable.
Tables and Charts

Table 1
Comparative Means by State MBE Scaling Practices

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Cut Score</th>
<th>LSAT</th>
<th>Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Scaled</td>
<td>49</td>
<td>134.3</td>
<td>154.8</td>
<td>0.833</td>
</tr>
<tr>
<td>Scaled</td>
<td>78</td>
<td>136.2</td>
<td>153.6</td>
<td>0.803</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>135.5</td>
<td>154.1</td>
<td>0.815</td>
</tr>
<tr>
<td>F-test Sig. (p=)</td>
<td>0.027</td>
<td>0.257</td>
<td>0.129</td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Comparative Distributions by State MBE Scaling Practices

<table>
<thead>
<tr>
<th>MBE Scaling</th>
<th>N</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut Score</td>
<td>Not Scaled</td>
<td>49</td>
<td>130</td>
<td>132</td>
<td>135</td>
<td>136</td>
</tr>
<tr>
<td></td>
<td>Scaled</td>
<td>78</td>
<td>131</td>
<td>132</td>
<td>135</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>127</td>
<td>131</td>
<td>132</td>
<td>135</td>
<td>137</td>
</tr>
<tr>
<td>LSAT</td>
<td>Not Scaled</td>
<td>49</td>
<td>147.4</td>
<td>150.5</td>
<td>154.1</td>
<td>158.8</td>
</tr>
<tr>
<td></td>
<td>Scaled</td>
<td>78</td>
<td>148.5</td>
<td>149.6</td>
<td>152.8</td>
<td>156.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>127</td>
<td>147.9</td>
<td>150.2</td>
<td>153.5</td>
<td>157.5</td>
</tr>
<tr>
<td>Bar</td>
<td>Not Scaled</td>
<td>49</td>
<td>0.700</td>
<td>0.740</td>
<td>0.860</td>
<td>0.925</td>
</tr>
<tr>
<td></td>
<td>Scaled</td>
<td>78</td>
<td>0.688</td>
<td>0.748</td>
<td>0.825</td>
<td>0.883</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>127</td>
<td>0.698</td>
<td>0.740</td>
<td>0.830</td>
<td>0.900</td>
</tr>
</tbody>
</table>

Table 3
Correlation Coefficients†

<table>
<thead>
<tr>
<th>Cut Score</th>
<th>Logit(Bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Not Scaled</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.319**</td>
</tr>
<tr>
<td>LSAT</td>
<td>0.797**</td>
</tr>
</tbody>
</table>

†Variance-weighted using N/(Bar^*(1-Bar)) as the factors.

---Correlation coefficient not significant at p ≤ 0.05.

**Correlation coefficient significant at p ≤ 0.01.
Table 4
Partial Correlation Coefficients
(controlling for LSAT) *

<table>
<thead>
<tr>
<th>CutScore</th>
<th>Total</th>
<th>Not Scaled</th>
<th>Scaled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logit(Bar)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.556**</td>
<td>-0.238**</td>
<td>-0.740**</td>
<td></td>
</tr>
</tbody>
</table>

*Variance-weighted using N/(Bar*(1-Bar)) as the factors.
**Correlation coefficient significant at p ≤ 0.01.

Table 5
Comparison of Steps in Stepwise Generalized Linear Modeling

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>-12.215</td>
<td>-6.698</td>
<td>-8.015</td>
</tr>
<tr>
<td>LSAT</td>
<td></td>
<td>0.089</td>
<td>0.098</td>
<td>0.118</td>
</tr>
<tr>
<td>Scaled[=0]*LSAT</td>
<td></td>
<td></td>
<td>-0.035</td>
<td></td>
</tr>
<tr>
<td>Cut Score</td>
<td></td>
<td>-0.050</td>
<td>-0.063</td>
<td></td>
</tr>
<tr>
<td>Scaled[=0]*Cut Score</td>
<td></td>
<td>0.040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Scale Parameter)</td>
<td></td>
<td>4.383</td>
<td>3.388</td>
<td>3.222</td>
</tr>
<tr>
<td>Omnibus Test of Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood Ratio Chi-Sq.</td>
<td></td>
<td>574.03</td>
<td>703.88</td>
<td>731.71</td>
</tr>
<tr>
<td>Significance</td>
<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Goodness of Fit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi Square</td>
<td></td>
<td>547.8</td>
<td>420.1</td>
<td>393.1</td>
</tr>
<tr>
<td>df</td>
<td></td>
<td>125</td>
<td>124</td>
<td>122</td>
</tr>
<tr>
<td>Likelihood Ratio Index</td>
<td></td>
<td>0.335</td>
<td>0.411</td>
<td>0.427</td>
</tr>
<tr>
<td>Bar-Predicted Bar Wtd. R-Square †</td>
<td></td>
<td>0.554</td>
<td>0.671</td>
<td>0.685</td>
</tr>
</tbody>
</table>

†Bar-Predicted Bar Wtd. R-Square
Table 6
In-State Law School Bar Passage
by LSAT, Cut Score and MBE Scaling

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
<th>95% Wald Confidence Interval</th>
<th>Hypothesis Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
<td>Lower</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-8.015</td>
<td>1.491</td>
<td>-10.937</td>
<td>-5.092</td>
</tr>
<tr>
<td>LSAT</td>
<td>0.118</td>
<td>0.010</td>
<td>0.098</td>
<td>0.137</td>
</tr>
<tr>
<td>[Scaled=0]*LSAT</td>
<td>-0.035</td>
<td>0.012</td>
<td>-0.059</td>
<td>-0.011</td>
</tr>
<tr>
<td>Cut Score</td>
<td>-0.063</td>
<td>0.009</td>
<td>-0.081</td>
<td>-0.045</td>
</tr>
<tr>
<td>[Scaled=0] * Cut Score</td>
<td>0.040</td>
<td>0.014</td>
<td>0.013</td>
<td>0.067</td>
</tr>
<tr>
<td>(Scale Parameter)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Omnibus Test of Model

<table>
<thead>
<tr>
<th>Likelihood Ratio Chi-Sq.</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>731.71</td>
<td>4</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Goodness of Fit

<table>
<thead>
<tr>
<th>Pearson Chi-Sq.</th>
<th>df</th>
<th>Val/df</th>
</tr>
</thead>
<tbody>
<tr>
<td>393.09</td>
<td>122</td>
<td>3.038</td>
</tr>
</tbody>
</table>

Likelihood Ratio Index 0.427

Bar-Pred. Bar Wtd. R-Sq. 0.885

Table 7
Coefficients (B) and Odds Coefficients [exp(B)]

<table>
<thead>
<tr>
<th></th>
<th>Scaled</th>
<th>Not Scaled</th>
<th>Ratio of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>exp(B)</td>
<td>B</td>
</tr>
<tr>
<td>LSAT</td>
<td>0.118</td>
<td>1.125</td>
<td>0.083</td>
</tr>
<tr>
<td>Cut Score</td>
<td>-0.063</td>
<td>0.939</td>
<td>-0.023</td>
</tr>
<tr>
<td>Ratio of Change</td>
<td>0.534</td>
<td>0.488</td>
<td>0.277</td>
</tr>
</tbody>
</table>

Table 8
Key State Cut Scores Percentiles
Summer 2001 v. Summer 2006

<table>
<thead>
<tr>
<th></th>
<th>5th</th>
<th>10th</th>
<th>25th</th>
<th>50th</th>
<th>75th</th>
<th>90th</th>
<th>95th</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>128.1</td>
<td>129.5</td>
<td>130.0</td>
<td>133.5</td>
<td>137.8</td>
<td>142.0</td>
<td>144.8</td>
</tr>
<tr>
<td>2006</td>
<td>129.3</td>
<td>130.0</td>
<td>132.3</td>
<td>135.0</td>
<td>138.0</td>
<td>141.0</td>
<td>144.8</td>
</tr>
</tbody>
</table>
Chart 1
Change in Fitted Law-School Bar Passage Rates
by Cut Score and LSAT (curves)
(The model, State Scores Scaled to MBE)
Chart 2
Cumulative Increase in Law-School Fitted Bar Passage Rates
by Lowering Cut Score from 145 to 130
by LSAT and by State MBE-Scaling Practices
Chart A-1

Gary S. Rosin, Professor of Law, South Texas College of Law. B.S., 1972, Texas A&M University; J.D., 1975, The University of Texas. An earlier version of this paper was presented at the Conference for Empirical Legal Studies, October 27 & 28, 2006 (poster session).

1 “First-takers” refers to persons taking the Bar for the first time. A more usual, but also more awkward, description of such persons is “first-time takers.”


jurisdiction). The overall passage rate was for all U.S. jurisdictions, while the high and low passage rates shown were the highs and lows among the 50 states only (excluding the District of Columbia and various territories).


5 For purposes of comparison and analysis, all cut scores were converted to the 200-point scale of the Multistate Bar Exam.

The Bar passage rate reported for a law school in the LAW SCHOOL GUIDE is the passage rate in the jurisdiction in which the largest number of the law school’s graduates took the Bar examination. E.g., LAW SCHOOL GUIDE 2004, supra note 3, at 77.


Id.

Some have even questioned the good faith of increases in cut score, or even of the Bar exam itself. See William C. Kidder, The Bar Examination And The Dream Deferred: A Critical Analysis Of The MBE, Social Closure, And Racial And Ethnic Stratification, 29 LAW & SOC. INQUIRY 547 (2004) (arguing that increases are intended only the limit the size of the Bar, without regard to the impact on minorities). See also Dannye Holley &

14 *Id.* at 11 fig. Jurisdictions Using the MultiState Bar Examination in 2001.


16 *Id.*


19 *See, e.g.*, BAR ADMISSIONS GUIDE, ch. VII, at 22 (2007)


23 *Id.*

25 *Id.*

26 *Id.* at 19.

27 *Id.*


29 *Id.*


31 Kane & Mroch (2005), supra note 30.


33 *Id.* (describing various equating, or scaling methods).

34 *Id.*; Harris (2003), supra note 30, at 12.

Scores only Half Safe?”, 48 BAR EXAM. 137, 137, (1979) [“Klein (1979)”] (“[A]n answer of a given quality does not always receive the same score.”).


37 Klein (1979), at 145-46 ) (“[T]he passing rate on an examination will ‘float’ upwards or downwards depending on the general caliber of the applicants ... as indicated by their average MBE score. Thus, we have standardized the pass/fail decision across examinations so that it is truly independent of both the caliber of applicants ... and the difficulty of the examination.”)

38 For purposes of comparison and analysis, all cut scores were converted to the 200-point scale of the Multistate Bar Exam.

39 BAR ADMISSIONS GUIDE 2000, supra note 6, at 22-24 chart VII; BAR ADMISSIONS GUIDE 2002, supra note 6, at chart VII.


41 E.g., id at 25-27. For a critical discussion of the methodology of the method used in Ohio’s cut-score study, see Deborah F. Merritt, Lowell L. Hargens & Barbara F. Reskin, Raising the Bar: A social Science Critique of Recent Increases to Passing Scores on the Bar Exam, 69 U. CIN. L. REV. 929 (2001) (“Raising the Bar”).

42 LSAC STUDY, supra note 4.

43 Id. at 6.

44 Id. at

45 Id. at 5-6, 25.
46 Id. at 8-9.

47 An indicator, or “dummy” variable is a binary variable that is coded based on whether the candidate has (“1”) or does not have (“0”) a particular characteristic. For examining the law school cluster, the LSAC study used 5 dummy variables, Cluster 1, Cluster 2, Cluster 4, Cluster 5 and Cluster 6. A candidate from a law school in Cluster 1 would be coded “1, 0, 0, 0, 0” (“yes” to Cluster 1 and “no” to Clusters 2, 4, 5 and 6). A candidate from a law school in Cluster 3, the reference cluster, would be coded as “0, 0, 0, 0, 0”. The resulting regression would show the effect of each indicator variable on the odds or probability of passing the Bar, as well as whether the effect was statistically significant.

48 Id. at 41-43.

49 Id. at 3.

50 Id. at 21-25.

51 Id. at 22.


54 Id. (Analysis Sample Data).

55 Compare, LSAC STUDY, supra note 4, passim, with Texas 2004 Study, supra note 4, at tbl. 3b.

56 Texas 2004 Study, supra note 4, at http://www.ble.state.tx.us/one/analysis_0704tbe.htm#q5.

57 A correlation coefficient of 0.98 equates to an R-Square of 96%, meaning that variance in mean LSAT accounts for 96% of the variance in mean Bar exam scaled score.
According to the LSAC, the confidence interval for an individual’s LSAT score is plus or minus three points.

Klein & Bolus, supra note 53, at http://www.ble.state.tx.us/one/analysis_0704tbe.htm#q5 (Research Questions and Answers, 5).


Michael Kane, Andrew Mroch, Douglas Ripkey, & Susan Case, Impact of the Increase in the Passing Score on the New York Bar Examination 100-31 (October 4, 2006)

Id.


Id. at http://www.cooley.edu/rankings/intro_7th.htm#factors (visited June 20, 2006)

The first-taker Bar passage rate is reported as a number between 1 and 100, rather than as a fraction or as a percentage.

PAR = [Bar/(Quality Index)] * 100.

The online version of Judging the Law Schools does not allow comparison of law schools by quality index. Instead, a school’s quality index must be calculated either using the formula in the text, or by dividing its actual Bar passage rate by its PAR.

Using the formula for PAR, 100*(100/120) is 83.33.


Id. at 77.

Arguably, what the PAR actually measures is the extent to which recent Bar results affected the quality of a recent entering class the law school was able to recruit.

See, e.g., LAW SCHOOL GUIDE 2004, supra note 3, at 64-73.

LAW SCHOOL GUIDE 2004, supra note 3, at 64-73, 76.


See, e.g., LAW SCHOOL GUIDE, supra note 3 at 79 (Bar passage rates for the University of Akron School of Law).
See, e.g., 2001 Statistics, supra note 2, at 6-7 tbl. (First-Time Exam Takers and Repeaters in 2001). I often, half-seriously, attribute the February Effect to “Seasonal Affective Disorder”. In the Texas 2004 Study, Klein and Bolus noted the importance of both Bar preparation activities and whether the candidates worked more than twenty or more hours a week during the five weeks before the Bar exam. Klein & Bolus, supra note 53 at question 4, available at http://www.ble.state.tx.us/one/analysis_0704tbe.htm#q4. I suspect that the placement of the Winter Bar contributes to a lower level of preparation. In addition to activities and obligations as a part of the winter holidays, there are college Bowl games, including the extended Bowl Championship Series, and the NFL playoffs. In an individual conversation, the director of the Houston office of BAR-BRI reported lower levels of attendance on the nights that the Houston Rockets were competing for the NBA Championship. At most schools, Winter Bar first-takers are the persons who have somehow gotten off the three-year track—are graduating or taking the Bar early or late. At schools, such as my own (South Texas College of Law), with both a substantial part-time program and January admissions, students may well be graduating “on-time.” Nevertheless, the distractions are still there. December graduates may well have friends still in law school, which might distract them from studying for the Bar.


Id.

The LAW SCHOOL GUIDE reports first-taker Bar passage rates for the Bar examination taken in the State where the greatest number of the school’s graduates take the Bar examination. LAW SCHOOL GUIDE, supra note 3, at 77.
An adjusted passage rate greater than 1.00 is above the state average, while an adjusted rate less than 1.00 is below the state average.

For example, the Texas Board of Law Examiners provides detailed statistics for each administration of the Texas Bar Exam. See, http://www.ble.state.tx.us/Stats/main_stats.htm (last visited May 22, 2007).

Note that this rate is not the mean of the rates of all Texas law schools; rather it equates to a weighted mean for all Texas law schools.

This excluded a number of law schools, the majority of whose graduates, took the Bar in a nearby state, such as California, Illinois or New York. The rationale was that, for law schools such as Harvard, the overall
characteristics of its entering classes might not reflect the characteristics of students who wanted to practice in New York, instead of Massachusetts.

103 LAW SCHOOL GUIDE (2000), supra note 3, at 50.

104 LAW-SCHOOL GUIDE 1999, supra note 3, at 62.

105 The full-time variables were LSAT25FT, LSAT75FT, and FT1998. The part-time variables were LSAT25PT, LSAT75PT, and PT1997.

106 The variables for the midhinges were LSAT50FT and LSAT50PT. The LAW SCHOOL GUIDE did not begin publishing median information until the 2006 edition, but did not include the medians in its listing of “Key Facts.” LAW SCHOOL GUIDE 2007, supra note 3, at 56-65. The information on medians was not included in the admissions “Key Facts” until the 2008 edition. LAW SCHOOL GUIDE 2008, supra note 3, at 56-62.

107 The weighting variables were PT1997 and FT 1998. The derived variable was designated WLSAT50.

108 See Part II.B, supra.

109 BAR ADMISSIONS GUIDE 2000, supra note 2, at 22-24 chart VII.

110 BAR ADMISSIONS GUIDE 2002, supra note 2, at 22-24 chart VII. Oddly enough, the NCBE and the ABA did not publish a 2001 BAR ADMISSIONS GUIDE.

111 See supra note 47.

112 See note 114, supra and accompanying text.

113 All the correlation coefficients were significant (p ≤ 0.01) (two-tailed).

114 See Appendix, Part 1, infra (describing generalized linear modeling with a logit link function).

115 See Table 3, supra.

116 See Table 4, supra.
The designation “Scaled [=0]” indicates that this term of the model applies only in states that did not scale.

See Appendix, Part 2, infra (describing procedures used to test goodness of fit).

For a discussion of the interpretation of coefficients in the model, see Appendix, Part 3, infra.

See Appendix, Parts 1 and 3.

See, Appendix, Formulas 4b and 5, infra.

See, Appendix, Formula 3, infra.

See Table 2, supra.

Most states that use MBE scaling only scale total component scores; they did not scale the scores of subject areas or individual essay questions. In such states, nothing ensures that changes in scores on such subcomponents correspond to differences in performance, rather than to differences in question difficulty or standards of grading. States that already scale component scores should expand the process to include the scaling of the individual questions.

Raising the Bar, supra note 41, at 937-38 (2001) (perceived decline in essay scores).

This assumes that the skills necessary to recognize a correct answer equate with the skills necessary to recognize an issue, to resolve, and to communicate in writing a conclusions and its basis. See, id. at 934-35.


See generally, BAR ADMISSIONS GUIDE, chart VII (2006 ed.).
The values in Table 8 differ somewhat from those shown in Table 2. The latter represents the distribution of cut scores for schools included in this study, while the former is for all states, regardless of whether they were represented by a law school in this study.


The link function transforms the dependent variable, y, to g(y).

In Formula 1, (i) $\beta_0$ is the constant (or intercept), (ii) the $x_i$’s are the independent variables (or factors), (iii) the $\beta_i$’s are the respective coefficients of the variables (factors), and (iv) $\epsilon$ is the error factor, or residual. The symbol “$\sum$” indicates a series in which the individual terms (here, $\beta_i \cdot x_i$) are added together.


Parameter estimates were calculated using the GENLIN procedure in SPSS 15.0, with (i) Type III marginal sums of squares; (ii) a hybrid of Fischer scoring and Newton-Raphson, (iii) convergence when the change in parameter estimates was less than 1E-006, and (iv) standard errors and confidence intervals determined using a scale parameter determined using the Pearson Chi-Square statistic.

Logit(Bar) is the natural logarithm of the odds of passing the Bar.

The inverse of the link function, g, is denoted as $g^{-1}$.

The value shown in the Likelihood Ratio Chi Square test is the difference between -2 log-likelihood of the model tested and the -2 log-likelihood of the intercept-only model.

That is, a larger probability that the residual proportions are randomly distributed.

That is, the likelihood ratio statistic is the likelihood ratio Chi-square (see note __, supra.), divided by the -2 log-likelihood of the intercept-only model (here, 1,711.814).

The regression was variance-weighted, using $N_i / [E(Bar_i) \times (1 - E(Bar_i))]$ as the weighting factor.

Formula 1, supra note 132 and accompanying text.

Formula 2, supra note 135 and accompanying text.

For example, the exponential function of a plus b is equal to the exponential function of a, multiplied by that of b: $\exp(a + b) = \exp(a) \times \exp(b)$. THE CHEMICAL RUBBER CO., STANDARD MATHEMATICAL TABLES 102 (Samuel M. Selby ed., 17th Student ed. 1969).

The symbol “$\sum$” indicates a series in which the individual terms [here, $\exp(\beta_i \times x_i)$] multiplied together.


That its instantaneous rate of change with respect to one independent variable, holding all the others constant.

Here, E(Bar). See Formula 2b, supra.

ALFRED DEMARIS, REGRESSION WITH SOCIAL DATA: MODELING CONTINUOUS AND LIMITED RESPONSE VARIABLES 259 (Wiley Series in Probability and Statistics 2004) (expression 7.15); see also, ANDREW GELMAN & JENNIFER HILL, DATA ANALYSIS USING REGRESSION AND MULTILEVEL/HIERARCHICAL MODELS 82 (Cambridge Univ. Press 2007).

152 Id.

153 That is, (i) none of the terms of the model are squares, cubes, etc. of any of the independent variables, and (ii) none of terms is an interaction of one or more independent variables, such as $x_i \times x_j$.

154 In Table 7, the ratios for the Beta (B) coefficients are the absolute values of the straight ratios of the coefficients. The ratios of for the odds coefficients [$\exp(B)$] are the absolute value of the ratio of the percentage increase or decrease ($\exp(b) - 1.000$).