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Ruth Bader Ginsburg
SCHOOL OF LAW

AccessLex/LSSSE

BAR EXAM INITIATIVE

FINAL REPORT FOR RUTH BADER GINSBURG SCHOOL OF LAW

This report is for demonstration purposes only. Ruth Bader Ginsburg School of Law is a fictitious institution and the data used do not apply to any one particular institution. As such no inferences nor conclusions should be drawn based on the information reported herein.

DECEMBER 2020

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A. EXECUTIVE SUMMARY

The AccessLex/LSSSE Bar Exam Success Initiative is a collaborative effort to understand the factors that matter when it comes to first-time bar exam passage. AccessLex and the Law School Survey of Student Engagement (LSSSE) are working with law schools to analyze academic and student engagement factors among recent graduates, with a goal of identifying those that are most strongly correlated with, and predictive of, bar exam performance.

The incorporation of student engagement factors, as captured on the LSSSE Survey, renders the Bar Exam Success Initiative distinct from typical analyses of bar exam performance. Student engagement is a holistic concept, encompassing "the choices and commitments of students, of individual faculty members, and of entire institutions."[1] In other words, student engagement captures the tightly woven web of individual and institutional processes and actions that contribute to student outcomes. Deeper understanding of these relationships can enhance institutional efforts to improve bar passage rates.

This is the second and final report, which builds upon the work and findings presented in the interim report that was sent to your institution in the fall/winter of 2019 or early spring of 2020. This report explains the extent to which law school admission factors, law school academic performance, and behaviors and experiences associated with student engagement influenced bar exam performance among your 2018 and 2019 graduating cohorts. The report will also explain the nature of relevant relationships between and among different factors and variables.

The findings provided in this report are based on data your school provided regarding 2018 and 2019 graduates who were enrolled full-time at graduation. To be included in the analyses of bar exam outcomes, graduates must have also taken the bar exam in the July immediately following their graduation. Where appropriate, we compare findings from 2018 graduates with findings from 2019 graduates, but this type of comparison is not a central focus of the report. Most analyses were conducted using a single dataset consisting of both cohorts. This approach adds to the robustness of the findings and lessens the chances that a one-off outcome experienced by a single class is interpreted as a longer-term trend.

[1] Alexander C. McCormick, Jillian Kinzie & Robert M. Gonyea, *Student Engagement: Bridging Research and Practice to Improve the Quality of Undergraduate Education*, in HIGHER EDUCATION: HANDBOOK OF THEORY AND RESEARCH (M.B. Paulsen ed., 2013).

Below are notable trends and findings:

- **Law School GPA (LGPA) is the strongest predictor of bar passage.** LGPA shows an increasing and statistically significant relationship with bar passage, from a moderate 3.3 odds ratio for the first semester (1S) LGPA, to a large 5.5 odds ratio for final LGPA. By comparison, the relationships between LSAT score and UGPA with bar passage never exceed a 1.7 odds ratio (see p. 32; cf. Table A.3).
- **LSAT score and UGPA have tangible, but limited impacts on LGPA.** A one-point increase in LSAT score yields a 0.04 increase in both 1S LGPA and final LGPA. A 0.10 increase in UGPA yields a 0.05 increase in 1S LGPA and a 0.06 increase in final LGPA. (see p. 33; table A.4). These trends persist even when student engagement factors are added to the models (see p. 35; cf. Table A.6).
- **Student engagement factors along with academic factors better explain LGPA outcomes and bar passage than academic factors alone.** Models that combine academic factors and student engagement factors explain a larger proportion of the variation in LGPA and bar passage outcomes. For academic performance, the model with academic and engagement factors explains 84 percent of the variation in final LGPA, compared to 19 percent for the model consisting of academic factors only (see p. 24). For bar passage, our model that includes final LGPA and ten student engagement variables explains 49 percent of the variation in bar passage, compared to 44 percent for the model including final LGPA alone (p. 21).[2]
- **LGPA growth is predictive of bar passage.** The extent to which a graduate increased his/her LGPA from first semester to final year is predictive of a higher chance of passing the bar exam, irrespective of where either LGPA falls in the overall distribution. Average LGPA growth—approximately 0.17 grade points—is associated with more than a 19-percentage point increase in predicted likelihood of bar passage (see pp. 16-17).

The remainder of this report is structured as follows: Section B describes the approach and methodology used; Section C provides an overview of the study sample and its characteristics; Section D presents and explains the results and limitations of the analyses; and Section E concludes and provides our recommendations. We hope that this report, its findings, and its recommendations contribute to ongoing conversations undoubtedly taking place in your law school and help inform action premised on fostering academic and bar exam success among all students.

[2] This comparison is made using McFadden's R2, a statistic that we describe on page 21.

B. METHODOLOGY

The AccessLex/LSSSE Bar Exam Success Initiative examines the extent to which academic and student engagement factors among recent graduates are correlated with, and predictive of, both law school academic performance and bar exam passage. The analyses discussed in this report are based on demographic and transcript data obtained from Ruth Bader Ginsburg School of Law (RBG Law School), regarding graduates who earned a J.D. in 2018 or 2019, were enrolled full-time at graduation, and took the bar exam for the first time in the July immediately following their graduation. Where possible, these data are matched with student engagement data from RBG Law School graduates who also completed the LSSSE survey in the spring of their 3L year. [3]

1. THE MODELS

To examine academic and bar exam performance, we construct a statistical model for each of the following outcomes:

- First-Time Bar Result (pass/fail)
- First-Semester (1S) LGPA
- First-Year (1L) LGPA
- Second-Year (2L) LGPA
- Final LGPA
- LGPA Growth (1S to final)

a. Logistic Regression

For the First-Time Bar Result model, we use logistic regression modeling. Logistic regression is a statistical method used to model binary outcome variables, such as bar exam result (i.e., pass/fail). In a logistic regression, one variable is considered the outcome variable; another variable (or set of variables) is considered the predictor variable. In the First-Time Bar Result models, first-time bar result (pass or fail) is the outcome variable. Other factors, such as LGPA, are the predictor variables.

Logistic regression modeling produces outputs called "log odds," which provide insight on the relationship between variables that we analyze. Log odds tell us two things: 1) general information about the impact of a change in the predictor variable (or set of variables) on the outcome variable; and 2) whether those impacts are statistically significant. For example, in

[3] Available online at http://lssse.indiana.edu/wp-content/uploads/2015/12/LSSSE-US-Survey-2019.pdf.

the First-Time Bar Result model, log odds tell us that an increase in LGPA increases odds of bar exam passage. The log odds also tell us that the increased odds are statistically significant.

This information is useful but difficult to interpret. Log odds do not directly communicate, for example, the extent to which a 0.50 increase in LGPA impacts chances of bar exam passage. In order to increase the usefulness of the logistic regression outputs, we do two things:

- First, we transform log odds into odds ratios, which help frame the strength of the relationship between the variables. Based on odds ratios, we can frame the size of relationships as small, medium, or large.
- Second, we calculate the predicted probability of bar passage based on LGPA. In this report, we identify a range of predicted probabilities of bar passage at various points of time. This is meant to provide a readily interpretable means of identifying students who may be at the greatest risk of not passing the bar, based on their LGPA.

b. Linear Regression

LGPA at various points of matriculation is the outcome variable in four of the models listed above. Linear regression is the method we use to analyze the relationships between the predictor variables and LGPA. Linear regression modeling is appropriate when the outcome variable is continuous; that is, it takes on a value along a range. For example, LGPA and LSAT score are continuous variables, whereas bar exam result (pass or fail) is a binary variable.

Unlike logistic regression, linear modeling produces a coefficient that is directly interpretable. The coefficient reflects the impact of a one-unit change in the predictor variable on the outcome variable, while holding all other variables constant. For example, linear regression allows us to measure the impact of a one-point increase in LSAT score on 1S LGPA. This is a powerful means of interpreting relationships between variables.

This report also incorporates a new model that examines growth in LGPA over time. LGPA growth is defined as the difference between final LGPA and 1S LGPA. We include this model to highlight the significance of change (whether improvement or diminishment) in academic performance and its relationship with both first-time bar passage and with student engagement factors, thereby capturing, to some extent, the malleability of learning potential and growth.

2. VARIABLES

a. Control Variables

Variables that are likely to influence the outcome variable but are not the explicit focus of a study are considered control variables. For all analyses, we account for differences associated with race, gender, age, and cohort year by incorporating them into our models as control variables. These demographic and biographical factors should not be interpreted as actionable bar result predictors.

b. LSSSE Engagement Indicators

To investigate the influence of student engagement on academic and bar exam performance, we examine final LGPA, LGPA growth, and bar exam result in relation to several LSSSE variables.[4] Four of these variables are LSSSE "Engagement Indicators" (EIs):

- **Learning to Think Like a Lawyer:** To what extent do students report that their courses emphasize critical and analytical thinking?
- **Student-Faculty Interaction:** How do students interact with faculty in matters both related and unrelated to classes and assignments?
- **Student Advising:** How satisfied are students with several areas of advisory services?
- **Law School Environment:** How do students perceive the law school environment and their "fit" in that environment?

Each EI is a composite measure of several individual LSSSE survey questions that are conceptually and statistically related (see p. 27; cf. table A.1). The individual questions included in each EI address slightly different aspects of common themes. When combined, the composite score provides a more complete and concise assessment of the central theme than the individual questions alone.

Table 1:

Other LSSSE Variables and Their Component Questions

Variable and Description	LSSSE Survey Questions
Emphasis on Academics combines the following variables about the extent to which RBG Law School emphasized:	Attending campus events and activities (special speakers, cultural events, symposia, etc.)
	Spending significant amounts of time studying and on academic work
	Providing the support students need to help them succeed academically
Supportive Environment combines the following variables about the extent to which RBG Law School emphasized:	Providing the support students need to thrive socially
	Helping students cope with their non-academic responsibilities (work, family, etc.)

[4] In total, fourteen different engagement variables, which account for forty-seven LSSSE questions, are included in this analysis.

Table 1 Cont.

Nonacademic Support combines the following variables about students' relationships with:	Administrative staff and offices
	Faculty and staff
	Other students
(Real-World) Experience combines the following variables about students' engagement in:	*Pro bono* work or public service
	Working for pay in a law-related job
Extra Effort combines the following variables about the extent to which students:	Worked with classmates outside of class to prepare for class assignments
	Discussed ideas from their readings or classes with faculty members outside of class
	Discussed ideas from their readings or classes with others outside of class (students, family members, coworkers, etc.)
Preparation for Class combines the following variables about the extent to which students engaged in:	Reading assigned textbooks, online class reading, and other course materials
	Preparing for class and clinical courses other than reading (studying, writing, doing homework, trial preparation, and other academic activities)
Self-Care combines the following variables about the extent to which students engaged in:	Exercising or participating in fitness activities
	Relaxing and socializing (watching TV, partying, etc.)
	Participating in community organizations (politics, religious groups, etc.)
Other Responsibilities combines the following variables about the extent to which students engaged in:	Working for pay in a nonlegal job
	Providing care for dependents living with them (parents, children, spouse, etc.)
	Commuting to class (driving, walking, etc.)
Legal Skills Development combines the following variables about students' perceptions that their legal education contributed to:	Developing legal research skills
	Writing clearly and efficiently
	Thinking critically and analytically
Broad Legal Education refers to a scaled version of the following variable about students' perceptions that their experience at RBG Law School contributed to:	Acquiring a broad legal education

c. Other LSSSE Variables

In addition to the EIs, this report also investigates several additional LSSSE variables, all but one of which are composite variables created for the purpose of this analysis. These are based on LSSSE survey questions that measure similar constructs and/or are conceptually or thematically related with one another. These variables and their component LSSSE questions are described in Table 1.

Table 2:

Models and Variables

	Model	Predictor Variable(s)	Outcome Variable
Non-LSSSE bar models	Bar result given 1S LGPA	1S LGPA	Bar result
	Bar result given 1L LGPA	1L LGPA	Bar result
	Bar result given 2L LGPA	2L LGPA	Bar result
	Bar result given final LGPA	Final LGPA	Bar result
LSSSE bar models	Bar result given LSSSE EIs	LSSSE EIs	Bar result
	Bar result given other LSSSE variables	LSSSE composite variables	Bar result
Non-LSSSE LGPA models	1S LGPA given incoming indicators	LSAT and UGPA	1S LGPA
	1L LGPA given incoming indicators	LSAT and UGPA	1L LGPA
	2L LGPA given incoming indicators	LSAT and UGPA	2L LGPA
	Final LGPA given incoming indicators	LSAT and UGPA	Final LGPA
	LGPA growth given incoming indicators	LSAT and UGPA	LGPA growth
LSSSE LGPA models	Final LGPA given LSSSE EIs	LSSSE EIs	Final LGPA
	Final LGPA given other LSSSE variables	LSSSE composite variables	Final LGPA
	LGPA growth given LSSSE EIs	LSSSE EIs	LGPA growth
	LGPA growth given other LSSSE variables	LSSSE composite variables	LGPA growth

3. STATISTICAL SIGNIFICANCE

A finding is statistically significant if we feel confident that the observed impact of a predictor variable on an outcome variable is not the result of randomness or chance. We tie our confidence to *p*-values. In all analyses in this report, variables classified as "statistically significant" have a *p*-value below 0.05. *P*-values estimate the probability that the relationship or impact of one variable on another is due to random chance. The lower the *p*-value, the less likely it is that the relationship is random. Our adopted threshold of $p < 0.05$ essentially means that there is no more than a 5 percent probability that the observed impact of the predictor variable (or set of variables) on the outcome variable is due to random chance.

An absence of statistical significance should prompt some caution when interpreting a finding, especially when the finding is weak in magnitude or counterintuitive. Nevertheless, a lack of statistical significance does not mean that the observed relationship lacks practical significance; nor does it necessarily mean that the correlation is random (or spurious). The absence of statistical significance only indicates that our model is unable to identify a link between a predictor variable and an outcome with sufficient statistical confidence. This can sometimes be the result of not having a large enough sample size, which is in some cases a limitation in this report.

On the other hand, a variable might be statistically significant, but not *practically* significant. This is most common when a predictor variable has a statistically significant but modest impact on the outcome. In this case, the costs of taking action in response to the finding are not justified by the modest potential for upside.

It is important that all findings in this report be contextualized in light of issues of relevance and importance within your school. A predicted first-time bar passage rate increase of 2 percent might be more meaningful to one school than to another. Our objective is to highlight findings that appear consequential and provide insight on how to interpret those findings. But in the end, it is members of your law school community who are best positioned to determine what is important and what should be acted on.

C. DATA OVERVIEW

We have administrative data (provided by your institution) for 4430 individuals who graduated from RBG Law School in either 2018 or 2019, all of whom were enrolled full-time at graduation. For 280 of these graduates, bar performance data is missing; thus, they are included in our LGPA analyses but not our bar analyses. A subset of this sample self-selected to complete the 2018 or 2019 LSSSE survey.

Table 3:

Sample Demographics
(Full Sample and LSSSE Respondents)

	Full Sample		LSSSE Respondents	
	Observations	**Percent**	**Observations**	**Percent**
Race/Ethnicity				
Asian	398	9.0	168	8.7
Black	365	8.2	137	7.1
Latino/a	502	11.3	169	8.7
White	3022	68.2	1398	72.2
Remaining	147	3.3	64	3.3
Gender				
Female	2408	54.3	1091	53.9
Male	2026	45.7	932	46.1
Total	**4434**	**100**	**1934**	**100**

Overall, 75.0 percent of RBG Law School graduates in our sample passed the bar exam on their first attempt (July 2019). Tables 3 and 4 provide an overview of the bar results and demographic composition of the full sample and of the subset for which we have LSSSE responses.

Table 4:

Bar Passage by Race
(Full Sample and LSSSE Respondents)

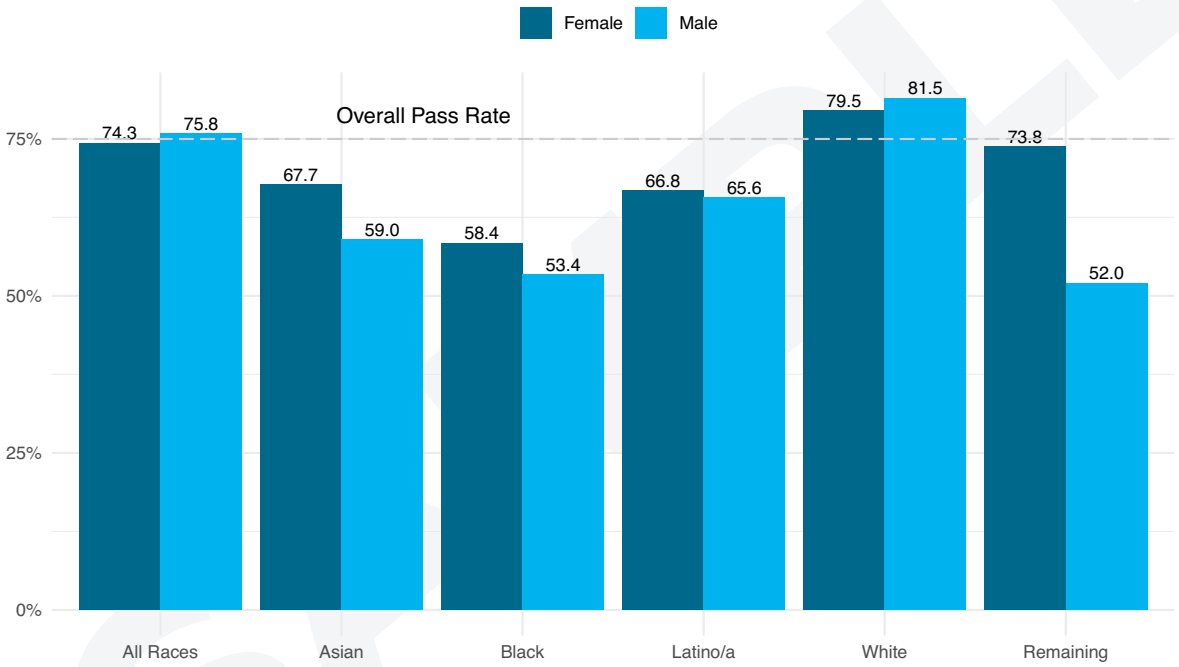
	Full Sample		LSSSE Respondents	
	Observations	**Passed (%)**	**Observations**	**Passed (%)**
Asian	360	64.4	157	64.3
Black	326	57.1	127	58.3
Latino/a	464	66.2	158	62.7
White	2874	80.5	1339	82.1
Remaining	130	65.4	64	65.5
Total	**4154**	**75.0**	**1845**	**76.7**

Figure 1 compares bar passage rates by race and by gender. In general, bar passage rates for men and women are similar (except within the "Remaining" category). There are pass rate disparities by race and ethnicity in the sample we analyze. White students passed at a rate of almost ten percentage points higher than any other group (see Table 4) and more than twenty percentage points greater than Black students. This is an area of concern.

Figure 1:

Bar Passage (%) by Gender and Race

Full Sample, n = 4154



The median and mean UGPA of the full sample are 3.36 and 3.30, respectively. These figures closely resemble the median and mean UGPA among the pool of LSSSE respondents (3.36 and 3.32). Median and mean LSAT scores for the full sample (154.00 and 154.33) are also similar to those among the LSSSE respondents (154.00 and 154.48). Table 5 details the number of observations, median, mean, and other summary statistics for RBG Law School.

Table 5:

Summary Statistics
(Full Sample and LSSSE Respondents)

	Observations	Median	Mean	Standard Deviation	Minimum	Maximum
Full Sample						
UGPA	4238	3.36	3.30	0.40	1.82	4.17
LSAT	4353	154.00	154.33	6.03	130.00	174.00
LGPA						
First Semester	4086	3.13	3.10	0.47	1.16	4.29
1L	4090	3.14	3.11	0.44	1.67	4.24
2L	4270	3.23	3.21	0.38	2.00	4.25
Final	4430	3.28	3.27	0.36	2.04	4.23
Growth	4086	0.15	0.17	0.26	-0.86	1.79
LSSSE Respondents						
UGPA	1847	3.36	3.32	0.40	1.82	4.17
LSAT	1899	154.00	154.48	6.22	130.00	172.00
LGPA						
First Semester	1822	3.14	3.11	0.48	1.54	4.29
1L	1824	3.15	3.12	0.46	1.67	4.24
2L	1891	3.24	3.22	0.39	2.00	4.25
Final	1934	3.30	3.28	0.36	2.22	4.23
Growth	1822	0.14	0.16	0.25	-0.69	1.25

D. ANALYSIS

The following discussion summarizes findings by each of the outcomes we examine: 1S LGPA; 1L LGPA; 2L LGPA; final LGPA; LGPA growth; and bar exam result. We examine each of these outcomes in three separate models: one that uses only academic and demographic data, one that includes the LSSSE EIs, and one that includes the other LSSSE variables (see Table 1 for a description of these variables).

1. INFLUENCES ON BAR EXAM RESULT

This section discusses analyses of several separate models to predict bar exam result (passage/failure). The first four models control for the same admission and demographic factors, but each one incorporates a different LGPA: 1S; 1L; 2L; and final.[5] This structure allows us to isolate and compare the predictive power of the factors on the different LGPAs. We then employ two models that add either the EIs or the other LSSSE variables to the Final LGPA model. The approach we take enables us to focus on the effects of student engagement on final LGPA while controlling for other potentially confounding factors and avoiding issues related to model overfitting.[6]

a. Academic Influences on Bar Exam Result

As we discuss above, the binary nature of bar exam result (pass/fail) requires the use of logistic regression modeling, which does not yield directly interpretable outputs or data. In order to provide more tangible insight regarding predictors of bar exam result, we provide odds ratios and calculate predicted probabilities of passing the exam for each of the LGPA variables individually.

Law school grades are the strongest predictors of bar exam result, irrespective of which LGPA is used. The higher the LGPA, the higher the chances of passing the bar. The size of the odds ratio increases from small to moderate as the LGPAs are progressively analyzed, from 1S LGPA to final LGPA. The results are both statistically significant and meaningful. We find statistically significant—but substantially smaller—relationships between LSAT score or UGPA and bar exam result.[7] No odds ratios for LSAT or UGPA in relation to any LGPA exceeds our threshold to be considered moderate; all effect sizes remain small. In contrast, the odds ratios for relationships between LGPA values and bar passage are moderate.

[5] The five LGPAs are related to one another in such a way that they cannot be placed in the same model, given that they are interdependent. (Table A.2 in the appendix shows the correlation between each of the LGPA variables.)

[6] "Model overfitting" occurs when more predictor and control variables are included in a model than can be supported by a given sample.

[7] Note, however, that UGPA is positively associated with each of the LGPA variables; thus, it may play an indirect role in bar passage.

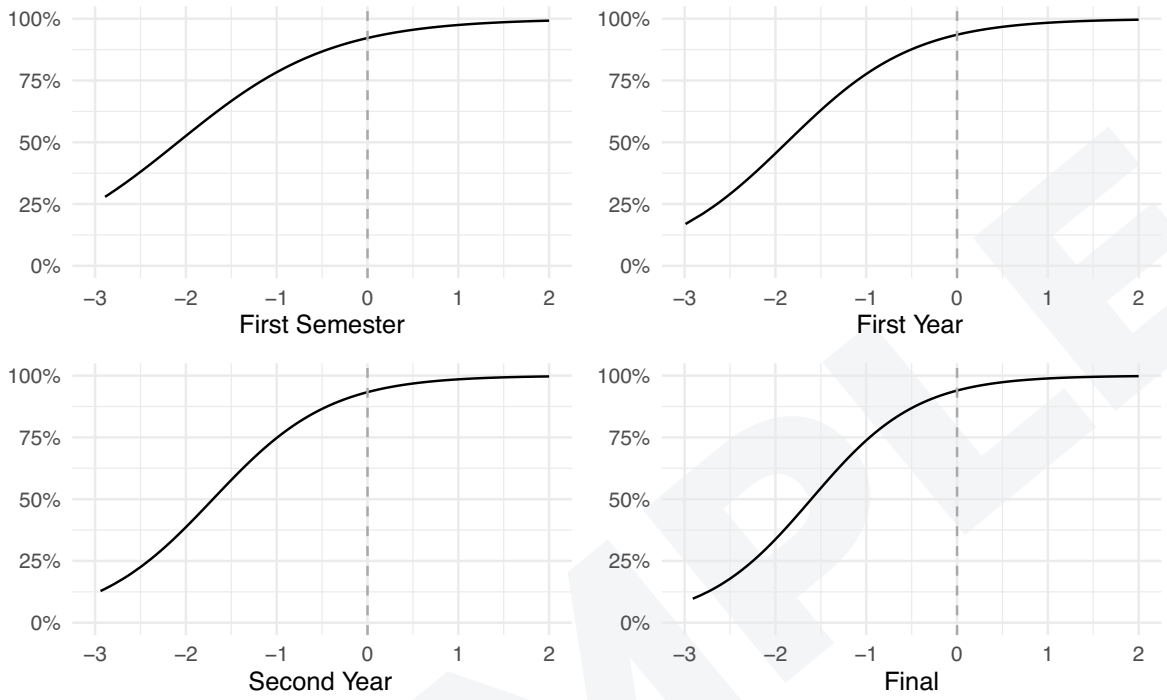
In other words, RBG Law School students' academic performance during law school is predictive of their probability of passing the bar to a degree that their academic performance prior to law school is not. This aligns with much research finding that the law school academic experience plays a greater role in preparing students for the bar exam (and entry into the legal profession) than does undergraduate academic performance or LSAT score.

Figure 2 shows the predicted probability of passing the bar based on LGPA at four points during a student's law school career. The upward slope of the plots for the models (1S, 1L, 2L, and final LGPA) indicates that higher LGPAs are associated with higher predicted probabilities of bar passage. This may be an obvious point; but what is noteworthy is the shape of the slopes. The steepness of the slopes on the left side of each figure suggests that even modest increases in LGPAs among students with below-mean LGPAs can have substantial impacts on predicted bar passage probability. And the lower the LGPA, the greater the potential impact.

Thus, it is important to distinguish among underperforming students. For example, for both 1L and final LGPA, a student who is two standard deviations below the mean is more than twice as likely to pass the bar exam than a student who is three standard deviations below. (Not enough data is available to make the same inference in the case of 1S LGPA and 2L LGPA.) These trends suggest that academic support interventions that target students at the lowest grade tiers offer the most "bang for the buck." For example, a student whose 1L LGPA is one standard deviation below the mean is still predicted to have an 78 percent likelihood of passing the bar; a student whose 1L LGPA is two standard deviations below the mean, however, has only a 45 percent predicted likelihood of passing the bar.

Figure 2:

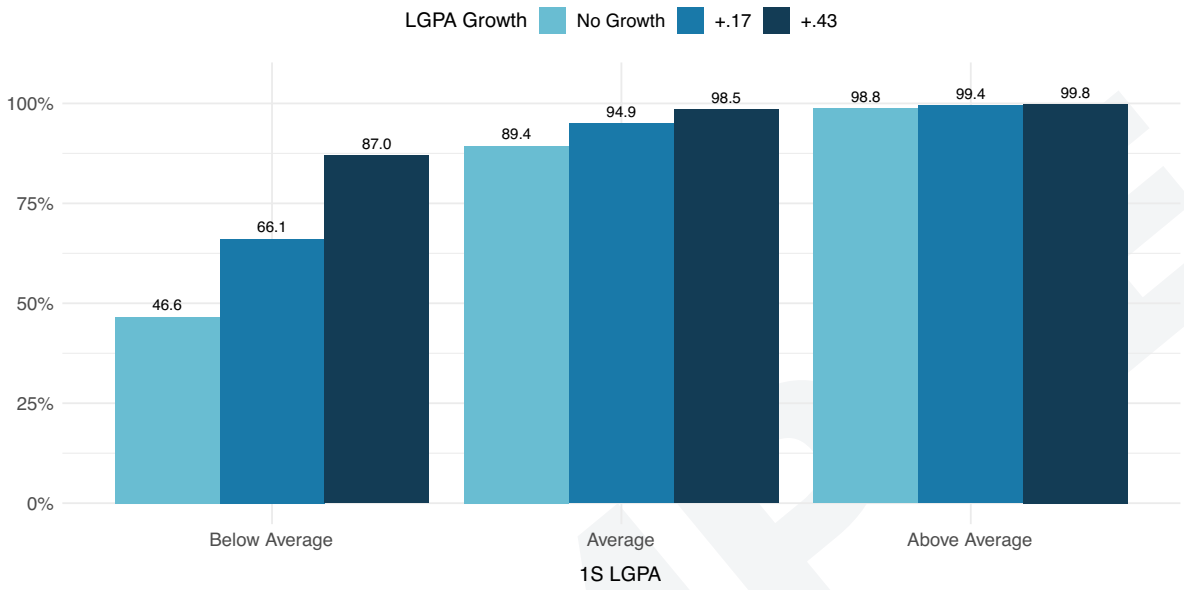
Predicted Probability of Passing the Bar Given LGPA



It is worth considering the impact of LGPA growth (difference between final LGPA and 1S LGPA) in the light of this analysis. Figure 3 shows the effect of LGPA growth for students with below average (one standard deviation below the mean; 2.63), average (3.10), and above average (one standard deviation above the mean; 3.57) 1S LGPAs. Consider a student with a 1S LGPA of 2.63, or one standard deviation below the mean. In that student's case, average LGPA growth—approximately 0.17 grade points—is associated with more than a 19-percentage point increase in predicted likelihood of bar passage. If that same student's LGPA were to rise to one standard deviation above the mean—approximately 0.43 grade points—the predicted increase in bar passage likelihood rises more than 40 percentage points. The latter is surely no easy feat. But the overall point is that LGPA improvement increases one's chances of passing the bar exam, irrespective of where the LGPA falls in the overall distribution. The findings strongly suggest that the most "bang for the buck" can be obtained through early interventions targeting students at the lowest ends of the distribution. (See Part E below.) There is also the potential that for students with lower grades, skills enhancement that mimics the skills acquisition of students with higher grades may increase chances of bar passage, even when LGPA does not rise.

Figure 3:

Predicted Probability of Passing the Bar Given LGPA Growth by 1S LGPA



b. Student Engagement and Bar Exam Result

Figure 4 is a coefficient plot illustrating the relationships between the LSSSE variables and bar result. The figure is a visualization of findings from our analysis of the relationships between student engagement and bar exam results. Each effect is shown as a black dot, pierced by a horizontal line indicating its 95 percent confidence interval. A confidence interval is a range of values within which the true value for a given variable is likely to fall. (Think of it as a margin of error in an election poll.) A 95 percent confidence interval indicates that there is only a 5 percent probability that the true value for a given variable will fall outside of that range.

The vertical black line indicates an odds ratio of one, or a null effect. In order for an effect to be considered statistically significant, its confidence interval (the horizontal line) must not cross the vertical black line. Statistically significant effects are highlighted in blue. Placement on the right side of the vertical black line means that the relationship between the engagement factor and odds of bar passage is positive (variables flow in the same direction). Placement on the left side means that the relationship is negative (variables flow in opposite directions). The farther the black dot is located away from the vertical black line, the more intense the observed relationship.

Of the four EIs, only *Student-Faculty Interaction* is a statistically significant predictor of the likelihood of bar exam passage. Three of the other LSSSE variables that we consider have relationships that are both statistically significant and of noteworthy intensity with bar passage: *(Real-World) Experience, Extra Effort*, and *Preparation for Class*.

Students who report higher levels of *Student-Faculty Interaction* are less likely to pass the bar exam. The component survey questions within this variable center on student communication with faculty on a range of topics, including academic performance, job searches, and social functions. It is unclear why *Student-Faculty Interaction* is negatively associated with bar passage, but this finding may suggest that students who are more likely to have difficulty passing the bar exam are more likely to seek help from faculty members—which would be a good thing.

The more time students spend working in law-related jobs (paid or *pro bono*), the more likely they are to pass the bar exam. On the other hand, we find that the more time students spend preparing for class, the less likely they are to pass the bar exam. Likewise, *Extra Effort* is also negatively and significantly associated with bar passage. These findings strike us as counterintuitive; but there may be something to it. It could be that struggling students are studying hard, but not efficiently or effectively. This could be an opportunity for interventions focused on study skills development to yield positive impacts on law school grades and bar exam performance.

The upshot of these analyses is that LGPAs are the most meaningful bar result predictors at every juncture. A single standard deviation increase in Final LGPA is associated with an odds ratio of 5.52 whereas, although statistically significant, one of the largest odds ratios for a LSSSE factor is only 1.24.

Figure 4:

Effect of LSSSE Student Engagement Factors On the Odds of Bar Passage

Odds Ratios and 95 Percent Confidence Intervals

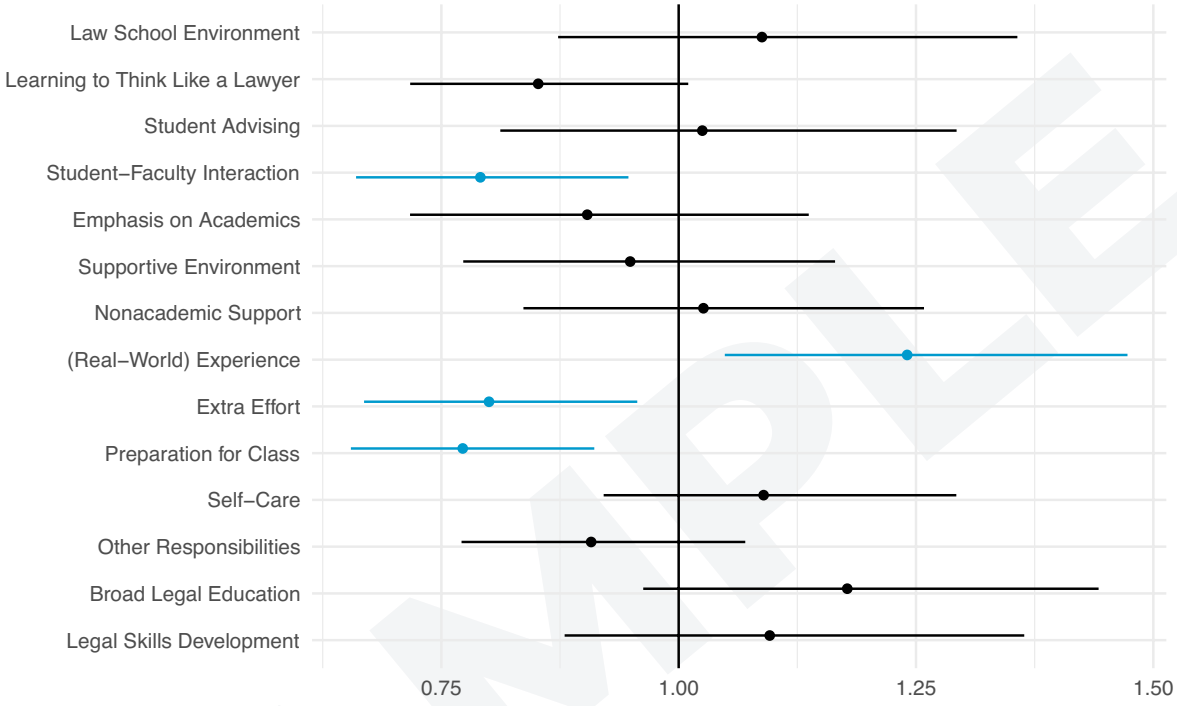


Figure 5 shows the plots for the predicted probability of bar passage for *Student-Faculty Interaction* and *Real-World Experience*. Zero (0) on the x-axis is the mean of the associated variable, while the other numbers represent the number of standard deviations above (or below) the mean. The y-axis represents the probability of bar passage (percent). In both plots, a standard deviation increase or decrease in the predictor variables results in a modest change in the likelihood of bar passage.

Figure 5:

Predicted Probability of Bar Passage
Given Student-Faculty Interaction and (Real-World) Experience

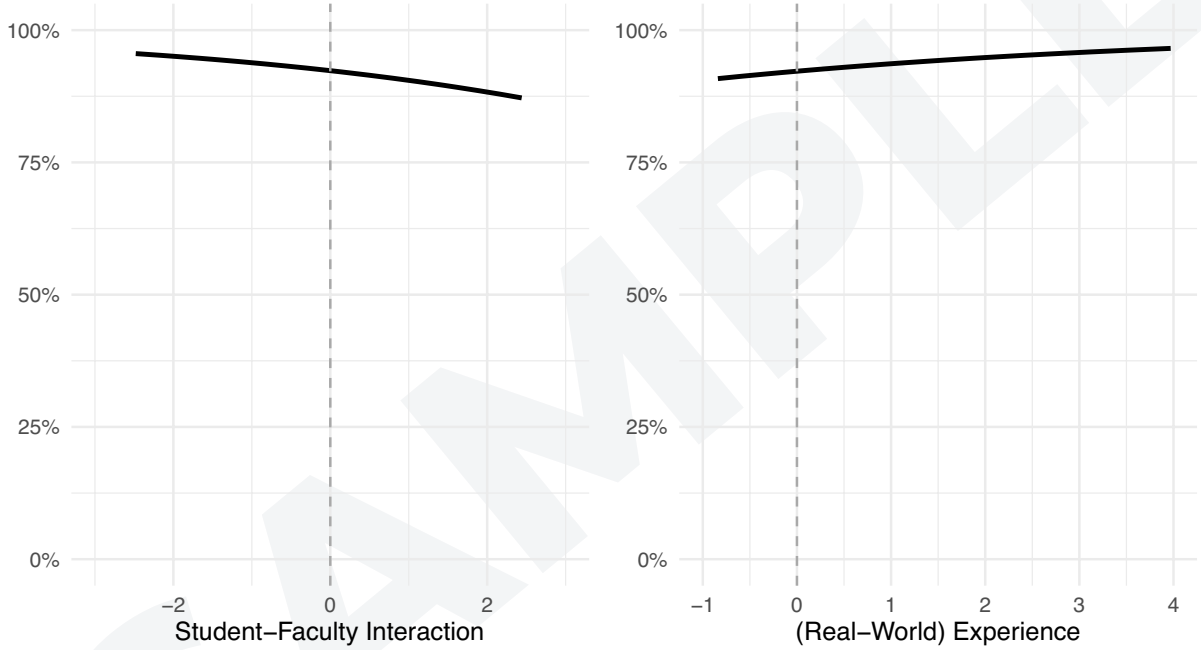
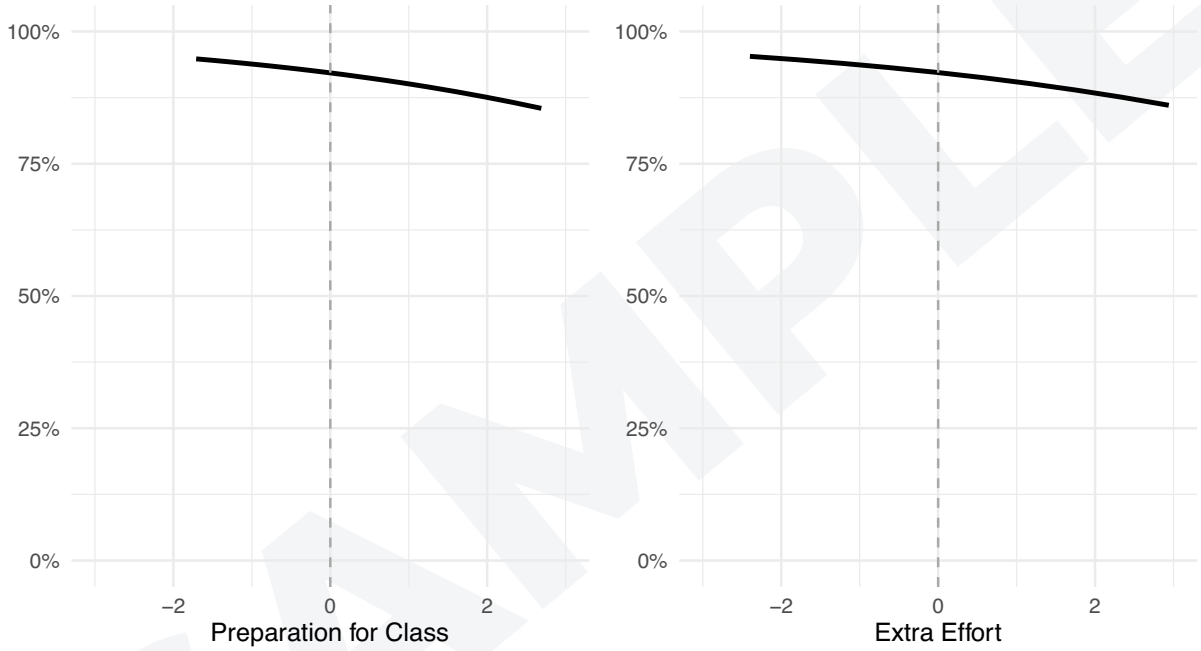


Figure 6, meanwhile, shows the plots for *Preparation for Class* and *Extra Effort*. Again, zero (0) on the x-axis represents the mean of the LSSSE variable, and one represents a standard deviation increase over the mean. While both variables are statistically significant, the significantly different slopes of the lines indicate that they have different substantive impacts on bar passage.

Figure 6

Predicted Probability of Bar Passage Given Preparation for Class and Extra Effort



A useful statistic for comparing logistic regression analysis is the value of McFadden's R-squared (R^2). McFadden's R^2 is used in logistical regression to arrive at an approximate value for R^2, a measure of the amount of variation in a dichotomous outcome variable that is explained by the predictor variables included in the model. This variation can be expressed as a percentage value. In principle, the higher the proportion of variance explained, the better. McFadden's R^2 values for the non-LSSSE bar passage models range from 0.24 (1S LGPA) to 0.44 (final LGPA). The LSSSE bar passage models explained a similar amount of variation compared to final LGPA: 41 percent for EIs, and 49 percent for other composites.

2. EXAMINING INFLUENCES ON LGPA

Identifying factors that are statistically related to law school academic performance can help support evidence-based academic and bar success strategies at RBG Law School. Here we focus on the relationships between LGPA and the predictor variables: LSAT score, UGPA, and LSSSE engagement factors.

a. LSAT and UGPA

The estimates from each LGPA model (1S, 1L, 2L, final, and growth) suggest that both LSAT score and UGPA are positive and statistically significant predictors of LGPA (see Table A.4). Figure 7 shows both the observed outcomes of individual graduates (dots) and the predicted relationship (red line) between each LGPA and either LSAT scores or UGPA. A steeper line indicates a stronger relationship; a flatter line indicates a weaker relationship.

Figure 7

Predicted LGPA Given LSAT Score and UGPA

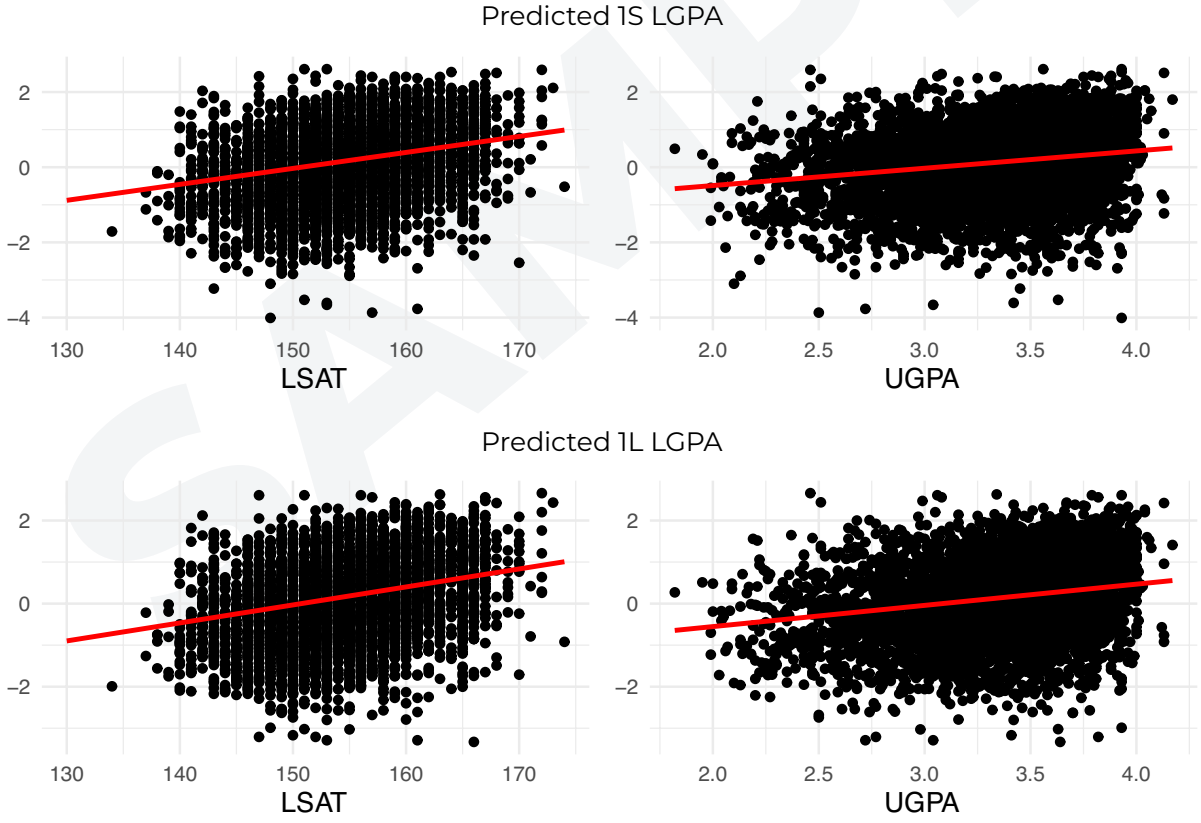
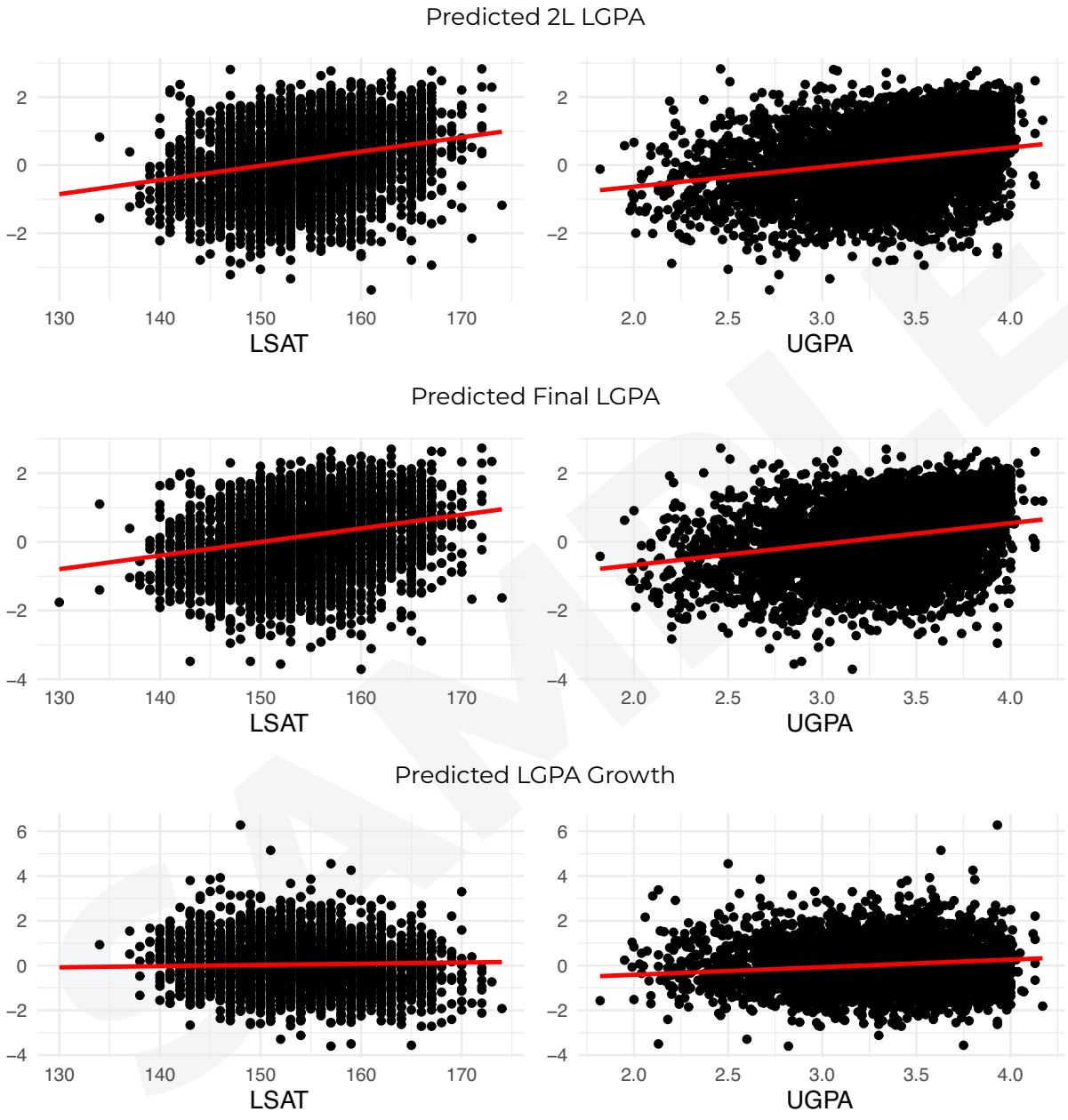


Figure 7 Cont.



LSAT score is most strongly associated with first-semester (1S) and first-year (1L) LGPA, relative to the other LGPA variables. A one-point increase in LSAT score is associated with a predicted 1S or 1L LGPA increase of 0.04. UGPA is most strongly associated with final LGPA. A one-tenth point increase in UGPA (e.g., 3.4 to 3.5) is associated with a predicted increase in 1S LGPA by 0.06.

An important component of any linear regression analysis is the value of R^2, which measures the amount of variation in the outcome variable that is explained by the predictor variables included in the model. As is the case with McFadden's R^2, which we describe above, this variation can be expressed as a percentage value and, in principle, the higher the proportion of variance explained, the better. R^2 values for the LGPA models range from 0.15 (1S LGPA) to 0.19 (final LGPA). This means that LSAT score and UGPA explain 15 percent of the variation in 1S LGPA and 19 percent of the variation in final LGPA.[8] It should be noted that R^2 values primarily denote a model's goodness-of-fit to a data set—not one variable's effect size or predictive value per se. So, while values for R^2 fluctuate within this small 15 percent to 19 percent range for our LGPA models, we can draw the conclusion that a substantial majority of the variation in our law school performance data is not explained by LSAT score and UGPA alone.

b. Engagement and Final LGPA and LGPA Growth

Figures 8 and 9 below depict the estimated effects of the LSSSE student engagement variables on final LGPA and LGPA growth. The estimated sizes of the effects are represented by the dots, and the piercing black lines represent the 95 percent confidence interval. As explained in the *Influences on Bar Exam Result* section above, this is the range of values in which we have 95 percent confidence the true value lies. Statistically significant effects, highlighted in blue, do not cross the vertical black line (which is placed at zero). Placement of the dot on the right side of the vertical black line means the factors are positively related to each other. Placement on the left side means they are negatively related to each other. Distance of the dot from the vertical black line denotes the strength of the relationship: the farther away, the larger the effect.

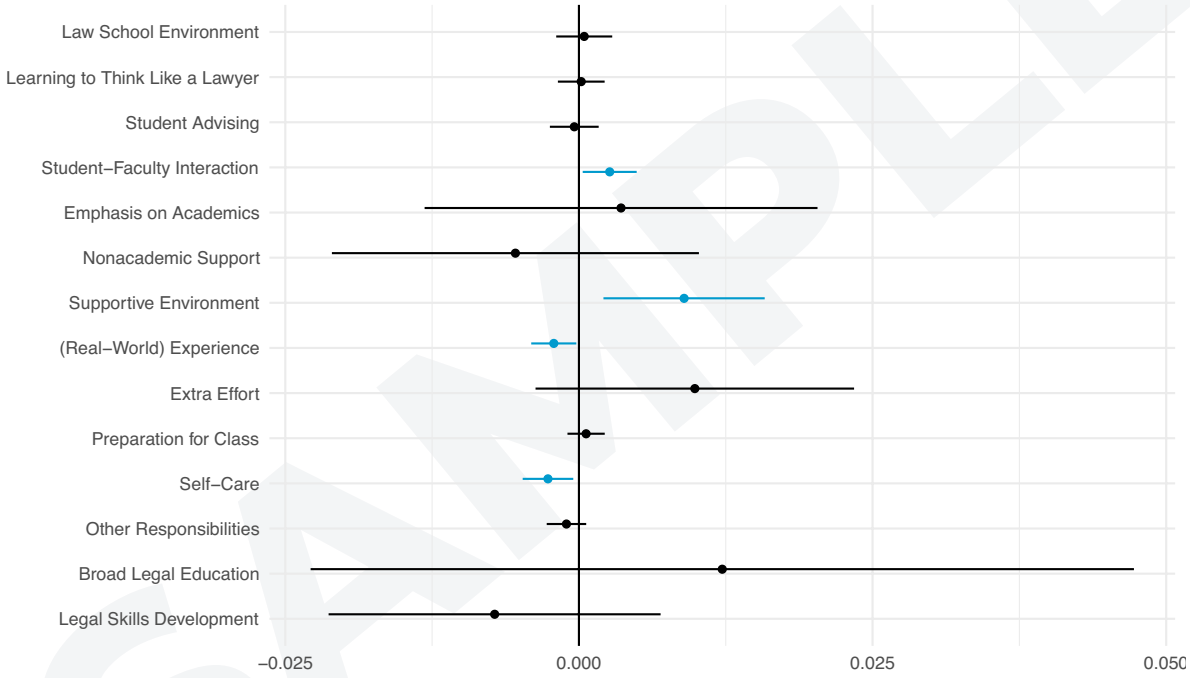
The final LGPA models have four statistically significant coefficients: *Student-Faculty Interaction, Supportive Environment, Real-World Experience,* and *Self-Care*. Students with more favorable perceptions of their relationships with faculty members had higher final LGPAs, as did those that reported a more supportive and helpful law school environment. These effects, however, are quite modest as evidenced by the close placement of the dot to the vertical black line. Likewise, the effects for *Real-World Experience* and *Self-Care* are not meaningfully different from zero.

[8] The LGPA growth model has an R2 value of 0.48, but this is largely explained by the addition of 1S LGPA to the model, which is a control variable in this particular case that accounts for a student's starting point.

Inclusion of the LSSSE variables increases the predictive power of the final LGPA models. The model explains 85 percent of the variation in final LGPA with the LSSSE variables compared to only 30 percent without the LSSSE variables. This stark difference in explanatory power strongly suggests that accounting for student engagement provides a potentially valuable means of identifying the roots of academic difficulty (and success), which is valuable to bar success efforts.

Figure 8

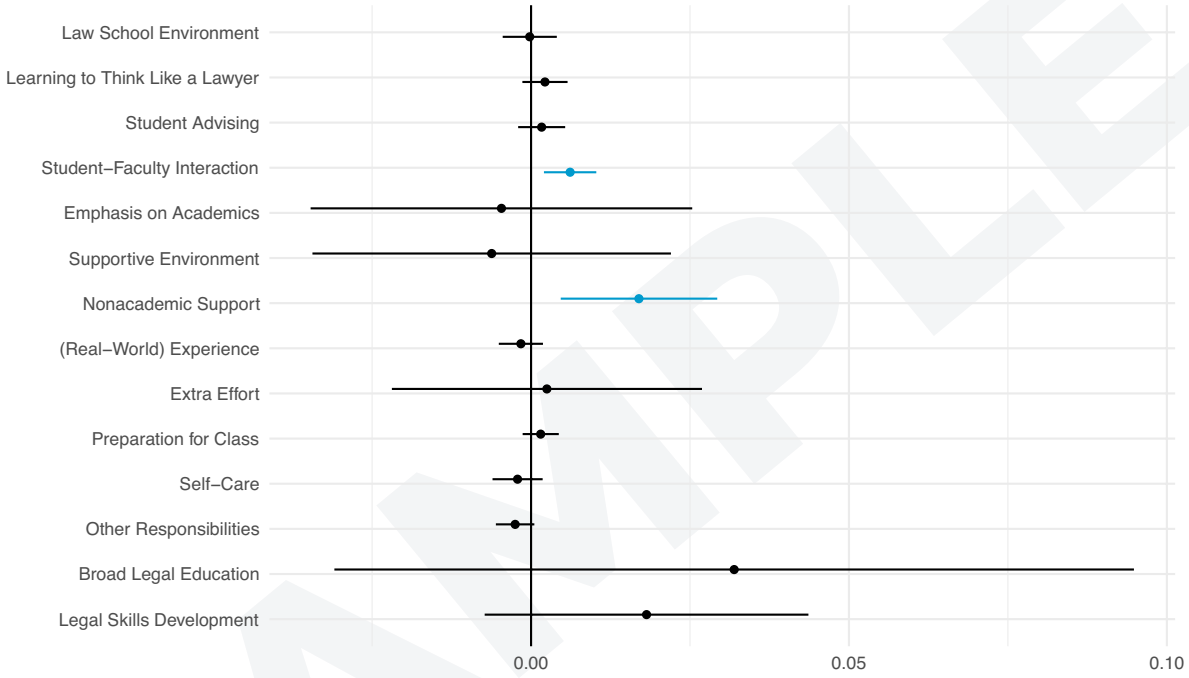
Engagement Influences on Final LGPA
Coefficients and 95 Percent Confidence Intervals



As shown in Figure 9, our analysis of engagement influences on LGPA growth yields two statistically significant results: *Student-Faculty Interaction* and *Nonacademic Support*. In both cases, the effect is positive but not meaningfully different than zero.

Figure 9

Engagement Influences on LGPA Growth
Coefficients and 95 Percent Confidence Intervals



Inclusion of the LSSSE variables in the LGPA growth model modestly increases the explanatory power, with both models explaining approximately 49 percent of the variance in growth (compared to 48 percent without the LSSSE variables).

3. LIMITATIONS

Although this report benefits from the addition of a second year of data, our ability to detect statistically significant effects is still constrained by sample size limitations. As we note above in Part D, this difficulty is particularly notable when investigating relationships between LSSSE responses and outcomes.

We are also limited by having observed student behaviors and experiences at only one point in a student's law school career—at the end of the 3L year. It seems unlikely that the behaviors and experiences captured by LSSSE at this one point are identical to students' behaviors and experiences at earlier points in law school. Behaviors and perceptions are not usually static across years. Given this limitation, we apply our student engagement analyses to final LGPA and LGPA growth models only. Both outcomes, however, are based on cumulative academic performance, which are impacted by earlier behaviors and experiences. Therefore, our engagement findings are likely deflated somewhat overall, with engagement factors being more influential than our results appear to indicate.

Lastly, a great deal of variation in outcomes is not captured in several of the models. Conventional indicators of academic performance and even engagement factors are valuable at helping to identify the roots of academic difficulty and those students most at risk of not passing the bar exam—but these factors do not tell the whole story. There are no sure-fire substitutes for the professional judgement and expertise of faculty and staff who work with law students daily. Nevertheless, the findings in this report can help to focus and guide efforts at RBG Law School to develop and implement interventions targeting law students' academic growth and bar preparedness.

Students' law school experiences are culminations of interactions with many different elements of the institution, and are built through relationships with many different people, including faculty, staff, and fellow students. Student engagement reflects institutional values, priorities and effectiveness; and it is a function of students' relationships as well. The classroom experience matters, and so does everything else. Much of the data that are useful in identifying one's chances of passing the bar fall outside of the classroom.

E. RECOMMENDATIONS

Given the results discussed above, we make the following recommendations. These recommendations are offered without knowledge of efforts that are planned or already underway at Ruth Bader Ginsburg School of Law. Thus, there may be some reference to actions already being planned or implemented. It is our hope that this report, its findings, and the following recommendations will contribute to ongoing conversations undoubtedly taking place in your law school and help inform action premised on fostering academic and bar exam success among all students.

- **Properly contextualize admission factors.** Incoming academic indicators (UGPA and LSAT score) are not particularly predictive of academic performance or the likelihood of bar passage over time (see pp. 32–33; cf. tables A.3 & A.4). And they have only nominal relationships with LGPA growth. This suggests that, although admission indicators are important, they are not determinative of academic and bar success.
- **Intervene early.** First-semester (1S) LGPAs can be an important tool for identifying students most at risk of long-term academic and bar exam difficulty. Therefore, RBG Law School should leverage 1S grades in targeting early interventions. The goal should be to identify the roots of the academic difficulty, foster skills enhancement, and put students in a position to maximize LGPA growth (see p. 17).
- **Foster growth mindsets.** Many law students believe that their academic abilities and outcomes are "fixed" or beyond their control. Moreover, law schools overall place undue weight on early performance as an indicator of ability and long-term potential. But our findings strongly suggest that academic growth is tied to bar exam success, irrespective of starting place (see p. 17). Academic support and bar success efforts should be centered on growth mindset frameworks, with the goal of fostering academic growth and skills enhancement among students. Messaging is important too. Students who experience academic difficulty early on should be advised that their starting place does not have to be their ending place.
- **Encourage real-world experience.** Encouraging real-world experience could involve strengthening relationships with potential legal employers, emphasizing clinics, increasing *pro bono* requirements, or other nudges. Students' perceptions that their law school experience encouraged or made possible such experiences were more likely to pass the bar, even after controlling for law school grades and other student engagement factors (see p. 33; cf. table A.4).

- **Maximize efficiencies.** Beyond early targeting, specific students whose LGPAs are one or more standard deviations below the mean are in a range where their LGPA has the steepest effect on bar passage. Above this range, the effect begins to plateau as students with higher LGPAs more consistently pass the bar exam (see p. 17). This means that students at the lower end of the grade distribution have the most to gain from effective interventions. This finding should support new and/or ongoing efforts at RBG Law School to more efficiently direct interventions and resources to those students who need them most.
- **Foster inclusive learning environment.** Black graduates passed the bar at noticeably lower rates than their White peers. This trend suggests the need for increased efforts to encourage inclusivity and belonging among students most likely to feel marginalized. Trends discussed in the 2020 LSSSE annual report show that students of color are less likely to feel adequately supported by their law schools and, as a result, less likely to feel a sense of belonging.[9] Inclusion and belonging are critical components of academic success. Therefore, effective efforts to foster inclusive learning environments could help increase bar passage rates among all students. The LSSSE survey is an effective tool for assessing the extent to which your students feel that your learning environment is an inclusive one.
- **Investigate possible issues with studying inefficiencies.** A counter-intuitive finding was that more time spent working on class assignments or discussing materials outside of class is negatively associated with bar passage. This could mean that some students could benefit from academic and bar success interventions premised on improving study skills.
- **Encourage smarter class preparation.** A counter-intuitive finding was that more hours per week spent preparing for class was negatively associated with bar passage. This could mean that some students are not studying efficiently, or perhaps are not included in study groups. It could also mean students are not taking advantage of efficient studying resources, causing them to spend more weekly hours studying to keep up with their peers—or fall behind.

[9] Law Sch. Survey of Student Engagement, Diversity & Exclusion: 2020 Annual Survey Results (2020), https://lssse.indiana.edu/wp-content/uploads/2020/09/Diversity-and-Exclusion-Final-9.29.20.pdf.

F. APPENDIX

Table A.1:

LSSSE Engagement Indicators and Their Component Questions

Variable and Description	LSSSE Survey Questions
Learning to Think Like a Lawyer combines the following variables about the extent to which RBG Law School emphasized:	Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth, and considering its components
	Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
	Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions
	Applying theories or concepts to practical problems or in new situations
Student-Faculty Interaction combines the following variables about the frequency with which students:	Used e-mail to communicate with a faculty member
	Discussed assignments with a faculty member
	Talked about career plans or job search activities with a faculty member or advisor
	Discussed ideas from your readings or classes with faculty members outside of class
	Received prompt feedback (written or oral) from faculty on your academic performance
	Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)
Student Advising combines the following variables about students' satisfaction with:	Academic advising and planning
	Career counseling
	Personal counseling
	Job search help
	School support in students' employment search

Table A.1 Cont.

Law School Environment combines the following variables about the extent to which RBG Law School emphasized:	Encouraging contact among students from different economic, social, sexual orientation, and racial or ethnic backgrounds
	Helping you cope with your non-academic responsibilities (work, family, etc.)
	Providing the support you need to thrive socially
	Attending campus events and activities (special speakers, cultural events, symposia, etc.)
	Providing the financial counseling you need to afford your education
	Providing the support you need to help you succeed academically

Table A.2:

LGPA Correlations

	1S LGPA	1L LGPA	2L LGPA	Final LGPA	LGPA Growth
1S LGPA	1.00	–	–	–	–
1L LGPA	0.93	1.00	–	–	–
2L LGPA	0.87	0.94	1.00	–	–
Final LGPA	0.84	0.91	0.97	1.00	–
LGPA Growth	-0.66	-0.44	-0.24	-.015	1.00

Table A.3:

LGPA Association with Bar Passage
Odds Ratios[10] and 95% Confidence Intervals

	Bar Passage				
	1S (n=3,721)	1L (n=3,725)	2L (n=3,883)	Final (n=3,975)	Growth (n=3,721)
1S LGPA	3.261*** (2.908, 3.669)				
1L LGPA		4.157*** (3.663, 4.737)			
2L LGPA			4.703*** (4.136, 5.370)		
Final LGPA				5.522*** (4.826, 6.347)	
LGPA Growth					3.305*** (2.867, 3.825)
LSAT Score	1.052*** (1.029, 1.075)	1.040*** (1.016, 1.064)	1.037*** (1.016, 1.060)	1.035*** (1.013, 1.058)	1.042*** (1.018, 1.067)
UGPA	1.675*** (1.292, 2.174)	1.438*** (1.100, 1.880)	1.206*** (0.929, 1.565)	1.002*** (0.767, 1.308)	1.128*** (0.851, 1.493)

Note: *p<0.1; **p<0.5; ***p<0.01; control variables are omitted for parsimony.

[10] This report adopts the following threshold values for estimating effect sizes on the basis of odds ratios: An odds ratio at or below 1.68 indicates a small effect; at or below 3.47, a moderate effect; at or below 6.71, a large effect. See Henian Chen, Patricia Cohen & Sophie Chen, *How Big is a Big Odds Ratio? Interpreting the Magnitudes of Odds Ratios in Epidemiological Studies,* 39 Comm. in Stat.: Simulation and Computation 860 (2010).

Table A.4:

LGPA Association with Academic Performance

	Law School GPA (LGPA)				
	1S (n=3,938)	1L (n=3,941)	2L (n=4,115)	Final (n=4,223)	Growth (n=3,938)
LSAT Score	0.043*** (0.038, 0.047)	0.043*** (0.038, 0.048)	0.042*** (0.037, 0.047)	0.040*** (0.035, 0.044)	0.005*** (0.001, 0.009)
UGPA	0.461*** (0.384, 0.537)	0.511*** (0.435, 0.586)	0.575*** (0.502, 0.648)	0.611*** (0.539, 0.682)	0.339*** (0.278, 0.401)
Male	-0.084*** (-0.143, -0.025)	-0.092*** (-0.151, -0.034)	-0.083*** (-0.140, -0.026)	-0.087*** (-0.143, -0.031)	-0.067*** (-0.114, -0.020)
Asian	-0.397*** (-0.504, -0.290)	-0.457*** (-0.563, -0.351)	-0.421*** (-0.523, -0.319)	-0.420*** (-0.520, -0.320)	-0.180*** (-0.265, -0.095)
Black	-0.245*** (-0.360, -0.131)	-0.316*** (-0.428, -0.203)	-0.355*** (-0.462, -0.248)	-0.384*** (-0.489, -0.280)	-0.253*** (-0.344, -0.163)
Latino/a	-0.254*** (-0.347, -0.162)	-0.296*** (-0.388, -0.205)	-0.289*** (-0.377, -0.200)	-0.288*** (-0.375, -0.201)	-0.141*** (-0.214, -0.067)
Remaining	-0.471*** (-0.681, -0.261)	-0.477*** (-0.683, -0.271)	-0.480*** (-0.679, -0.281)	-0.411*** (-0.603, -0.219)	-0.151* (-0.318, 0.015)
Age	0.002 (-0.004, 0.009)	0.006 (-0.001, 0.012)	0.009*** (0.003, 0.016)	0.012*** (0.005, 0.018)	0.012*** (0.006, 0.017)
Missing 1S LGPA			0.023 (-0.111, 0.158)	0.038 (-0.071, 0.147)	
Graduation Year: 2019	-0.019 (-0.077, 0.038)	0.010 (-0.046, 0.067)	0.017 (-0.038, 0.072)	0.021 (-0.033, 0.075)	0.057** (0.012, 0.102)

Note: *p<0.1; **p<0.05; ***p<0.01; The effect of UGPA on first semester (1S) LGPA (0.46) is adjusted to 0.046 in report discussion for ease of understanding. This is a contextualized reporting of the original model output located in the Appendix. Linear regression effects are typically reported in terms of a one-point increase, rather than a one-tenth point increase. The original output, which was 0.46 before contextualization, refers to the effect of a full one-point increase in UGPA on 1S LGPA; for example, from 2.5 to 3.5. Using a one-tenth point makes the finding more readily interpretable in the context of UGPA.

Table A.5:

LSSSE Variables' Association with Bar Passage

	Bar Result (Odds Ratios)	
	EIs (n=1,590)	Growth (n=1,529)
Learning to Think like a Lawyer	0.852* (0.717, 1.010)	
Student-Faculty Interaction	0.791** (0.660, 0.947)	
Student Advising	1.025 (0.812, 1.293)	
Law School Environment	1.088 (0.873, 1.357)	
Emphasis on Academics		0.904 (0.717, 1.137)
Supportive Environment		0.949 (0.773, 1.165)
Nonacademic Support		1.026 (0.836, 1.258)
(Real-World) Experience		1.241** (1.049, 1.473)
Extra Effort		0.800** (0.669, 0.956)
Preparation for Class		0.773*** (0.655, 0.911)
Self-Care		1.089 (0.921, 1.292)
Other Responsibilities		0.908 (0.771, 1.070)
Legal Skills Development		1.096 (0.880, 1.364)
Acquiring a Broad Legal Education		1.178 (0.963, 1.442)

Note: *p<0.1; **p<0.05; ***p<0.01; control variables are omitted for parsimony.

Table A.6:

LSSSE Variables' Association with Academic Performance

	Law School GPA (LGPA)			
	Final (n=1,556)	Growth (n=1,532)	Final (n=1,499)	Growth (n=1,476)
Learning to Think like a Lawyer	0.0002 (-0.002, 0.002)	0.002 (-0.001, 0.006)		
Student-Faculty Interaction	0.003** (0.0003, 0.005)	0.006*** (0.002, 0.010)		
Student Advising	-0.0004 (-0.002, 0.002)	0.002 (-0.002, 0.005)		
Law School Environment	0.0005 (-0.002, 0.003)	-0.0002 (-0.004, 0.004)		
Emphasis on Academics			0.004 (-0.013, 0.020)	-0.005 (-0.035, 0.025)
Supportive Environment			-0.005 (-0.021, 0.010)	-0.006 (-0.034, 0.022)
Nonacademic Support			0.009** (0.002, 0.016)	0.017*** (0.005, 0.029)
(Real-World) Experience			-0.002** (-0.004, -0.0002)	-0.002 (-0.005, 0.002)
Extra Effort			0.010 (-0.004, 0.023)	0.002 (-0.022, 0.027)
Preparation for Class			0.001 (-0.001, 0.002)	0.002 (-0.001, 0.004)
Self-Care			-0.003** (-0.005, -0.0005)	-0.002 (-0.006, 0.002)
Other Responsibilities			-0.001 (-0.003, 0.001)	-0.003 (-0.006, 0.001)
Legal Skills Development			-0.007 (-0.021, 0.007)	0.018 (-0.007, 0.044)
Acquiring a Broad Legal Education			0.012 (-0.023, 0.047)	0.032 (-0.031, 0.095)

Note: *p<0.1; **p<0.05; ***p<0.01; control variables are omitted for parsimony.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