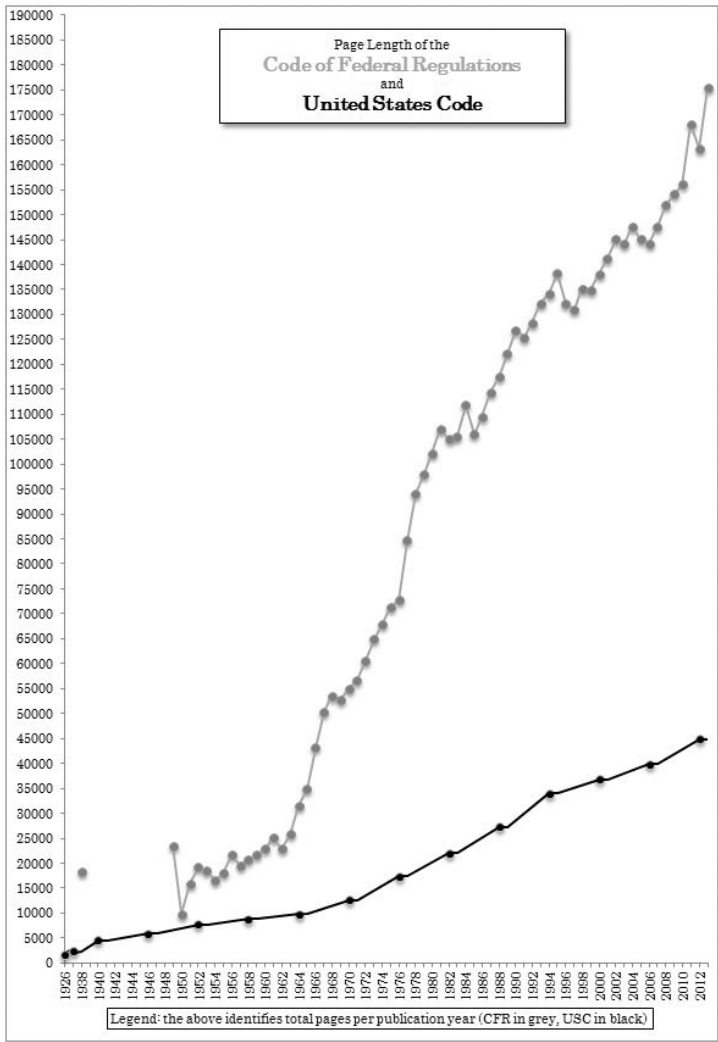


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About the cover

By Tom Cummins. The graph shows the total page length of each edition of the United States Code and Code of Federal Regulations from first edition through most recent. To learn more about the growth of federal law, see “Code Words,” beginning on page 91 of this issue. — Eds.

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LEARNING FROM AND ABOUT THE NUMBERS

Carole Silver & Louis Rocconi[†]

INTRODUCTION

One of the few characteristics of U.S. legal education not now under attack is its effectiveness in teaching students to ‘think like lawyers.’¹ This is its signature success, and in its most basic form it involves (although does not stop at) learning to apply the law to the facts. Learning to “think like a lawyer” goes well beyond this but our focus

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¹ See generally ELIZABETH MERTZ, *THE LANGUAGE OF LAW SCHOOL: LEARNING TO “THINK LIKE A LAWYER”* (2007) (discussing the ways in which law school teaches students to recognize certain issues as relevant and others as irrelevant (to law)); WILLIAM M. SULLIVAN, ANNE COLBY, JUDITH W. WEGNER, LLOYD BOND AND LEE S. SCHULMAN, *EDUCATING LAWYERS: PREPARATION FOR THE PROFESSION OF LAW* 28 (2007) (describing case-based Socratic dialogue as central to learning to think like a lawyer); Geoffrey R. Stone, *The Importance of Law School*, NY TIMES, July 25, 2011, www.nytimes.com/roomfordebate/2011/07/21/the-case-against-law-school/the-importance-of-law-school (“The practice of law demands a rigorous, self-critical (and critical), creative and empathic (how will my opponent and the judge see this issue?) mind-set. In general, legal education does this brilliantly. This is at the very core of a legal education.”); Nancy B. Rapoport, *Is ‘Thinking Like a Lawyer’ Really What We Want to Teach?*, J. OF THE ASSOCIATION OF LEGAL WRITING DIRECTORS CONFERENCE PROCEEDINGS 91, 93 (2001), papers.ssrn.com/sol3/papers.cfm?abstract_id=936248 (“shorthand for analyzing cases and statutes (applying both inductive and deductive reasoning and criticizing faulty reasoning), and communicating the analysis coherently? Is it shorthand for extrapolating principles of law from bits and pieces of authority (cases that are on-point or nearly so; analogous areas of law; law review articles)?”); Bridgette Dunlap, *Anyone Can ‘Think Like a Lawyer’: How the Lawyers’ Monopoly on Legal Understanding Undermines Democracy and the Rule of Law in the United States*, 82 FORDHAM L. REV. 2817, 2823(2014) (“Thinking like a lawyer entails the ability to separate one’s assumptions, and moral intuitions from the legal question at hand; attention to detail; an acceptance of counsel’s role in the adversarial system; and a sense that even seemingly plain legal language is filled with terms of art.” (footnote omitted)).

here does not lie with the debate about the meaning of this term. Rather, we take aim at the other end of the equation of legal analysis: the facts to which the law, once identified, must be applied. The question addressed in this article is how law schools help students learn to understand the facts that contextualize legal issues.

In the past, the implicit assumption was that students admitted to law school were smart enough to learn the facts on their own in their first years of practice. Law school admission has been sufficiently selective so that there was some confidence that those admitted had the capacity to learn these facts. Law schools did not necessarily defer entirely to practice as the laboratory for this learning, and certain upper-level courses aimed at particular industries, for example, also provided an important foundation. But generally, new graduates joining practice settings that involved particularly thorny factual contexts were assumed to have a learning period as they began their careers, during which they were exposed to the clients and industries that would comprise the bulk of their attention.

Today, that grace period has vanished, replaced by demands for “practice ready” students who can “hit the ground running” upon graduation. This means it is more important for law students to learn how to understand the facts surrounding their clients’ problems. At the same time, however, learning the facts is more difficult for law students than ever before. The difficulty relates to increasing reliance on numbers, tables, graphs and data as a means of conveying information, as well as to the complexity of business and finance. As Michael Blastland and Andrew Dilnot explain, *The Numbers Game*, “For good or ill, [numbers] are today’s preeminent public language – and those who speak it rule.”²

Law students are not necessarily well-prepared to take on the task of understanding the language of commerce and interpreting and explaining

² MICHAEL BLASTLAND AND ANDREW DILNOT, *THE NUMBERS GAME* (2008), (introduction). See Barry Gewen, *What are the Odds a Handy, Quotable Statistic is Lying? Better Than Even*, NY TIMES (February 2, 2009), www.nytimes.com/2009/02/03/books/03gewen.html?pagewanted=all&_r=0 (last vis. May 14, 2014) (describing the book’s “aim [a]s to render its readers a little smarter about statistics, to make better citizens of them”). See generally S. W. Dingman and B. L. Madison, *Twenty-first-century quantitative education: Beyond content*, 13 PEER REVIEW 15 (2011), www.aacu.org/peerreview/pr-SU11/DingmanMadison.cfm (quantitative demands imposed by today’s society and the modern workforce are great and continue to grow; consequently, quantitative skills are need in today’s workplace, regardless of career); B. L. MADISON AND L. A. STEEN, EDs., *QUANTITATIVE LITERACY: WHY NUMERACY MATTERS FOR SCHOOLS AND COLLEGES* (2003).

numerical information, however.³ Unlike most other professional schools and despite the growing importance of quantitative literacy, U.S. law schools generally do not require particular course work or substantive knowledge as a condition of admission.⁴ And the vast majority of law school applicants have not majored in a subject that requires quantitative literacy.⁵ Nevertheless, in light of the recent and continuing decline in applicants to law school, it is unrealistic to imagine that law schools will move to impose new admission conditions at this time. Rather, as the law schools compete for applicants, adding conditions to admission is likely to be viewed as a move in the wrong direction, and one that may even further deplete the pool of potential applicants.

Moreover, it is not unusual for law students to explain their decision to attend law school as related to an aversion to numbers, which is consistent with the absence of admission criteria related to numeracy skills. According to Professor Jessica Gabel, a number of her law students “revealed that they chose law school because math and science presented subjects that were ‘too hard,’ ‘too boring,’ or ‘useless.’”⁶ Michelle Obama provided her

³ In this article, we use the terms “numeracy,” “quantitative analysis,” “quantitative information” and “numerical, graphical or statistical information” interchangeably, unless otherwise noted. For examples of others who use these terms interchangeably see, N.D. Grawe, *Beyond Math Skills: Measuring Quantitative Reasoning in Context*, 149 NEW DIRECTIONS FOR INSTITUTIONAL RESEARCH 41 (2011); H.L. Vacher, *Looking at the Multiple Meanings of Numeracy, Quantitative Literacy, and Quantitative Reasoning*, 7 NUMERACY 1 (2014).

⁴ Certain law schools favor applicants with work experience, which may relate to gaining some understanding of business, for example. See *infra* n. 68.

⁵ According to data collected by Professor Derek Muller on applicants to law school in 2013, fewer than 13% of all law school applicants majored in a field that suggests facility with numbers: only 3.35% had majored in chemistry, biology, or electrical or mechanical engineering; 0.38% were math majors; and 8.76% majored in accounting, finance, or economics. Derek Muller, *Best Prospective Law Students Read Homer*, EXCESS OF DEMOCRACY (April 7, 2014), excessofdemocracy.com/blog/2014/4/the-best-prospective-law-students-read-homer (explaining that the data were obtained from LSAC). Note that the reported numbers reflect only majors with more than 150 applicants.

⁶ Jessica D. Gabel, *Forensiphilia: Is Public Fascination with Forensic Science a Love Affair or Fatal Attraction?*, 36 N.E. J. ON CRIM. & CIV. CON. 233, 256 (2010); see also Paula J. Williams, Kris Anne Tobin, Eric Franklin, Robert J. Rhee, *Tackling ‘Arithmophobia’: Teaching How to Read, Understand, and Analyze Financial Statements*, scholarship.law.ufl.edu/cgi/viewcontent.cgi?article=1487&context=facultypub (“Arithmophobia, . . . is a word that . . . Eric Franklin has coined to describe a common phenomenon I see among my students: fear of working with numbers, fear of spreadsheets. I have heard some students say, ‘I went to law school so that I wouldn’t have to deal with numbers.’”) (statement of Paula Williams); Gillian Hadfield, *Higher Demand, Lower Supply? A Comparative Assessment of the Legal Resource Landscape for Ordinary Americans*, 37 FORDHAM URB. L.J. 129 (2010) (“Lawyers don’t like numbers – as I often joke with my students, that’s why they choose to go to law school. Kidding

own take on this issue in comments delivered at the National Science Foundation: “And it starts with lighting the spark for science and math in elementary school and grade school. We talk about this all the time. I know for me, I’m a lawyer because I was bad at these subjects. (Laughter.) All lawyers in the room, you know it’s true. We can’t add and subtract, so we argue.”⁷ Nor is this a uniquely American characteristic; in interviews with international law students enrolled in U.S. law schools, the same explanation commonly is offered as the basis for their decision to study law outside of the U.S., too. A Belgian lawyer explained “I didn’t like math, I didn’t like science and the law appeared to be the most logical thing for me to do. I have no better explanation than that.”⁸

Others have written about the need for law graduates to have the same ability to think critically about numbers, business and financial matters as they do about legal issues.⁹ We build on this by offering insight into what

aside, however, the relative discomfort with numbers among lawyers individually adds up professionally to a slim empirical base on which to assess how well American lawyers are doing what they promise the public they will do: deliver legal services with competence and in the public interest.”); Elliott J. Weiss, *Accounting and Taxation: Teaching Accounting and Valuation in the Basic Corporation Law Course*, 19 CARDOZO L. REV. 679 (1997) (“Professors’ misgivings derive from the widely-held belief that most law students are math-averse - that they chose to attend law school, rather than business school, in large part because they wanted to avoid courses in which they would be required to deal with mathematical concepts.”); Robert Ambrogi, *What Lawyers Don’t Get About Finance*, BULLSEYE (March 26, 2008), practice.findlaw.com/financing-a-law-firm/what-lawyers-don-t-get-about-finance.html (“There are two kinds of people in the world, says finance expert Tom E. Greene: word people and number people. Most lawyers fall into the first group, which explains why they either panic or gloss over when faced with financial concepts in litigation.”).

⁷ Remarks at the National Science Foundation Family-Friendly Policy Rollout (9.26.2011), avail. at www.whitehouse.gov/the-press-office/2011/09/26/remarks-first-lady-national-science-foundation-family-friendly-policy-ro (visited 6.5.2014). See Arden Rowell and Jessica Bergant, *Numeracy and Legal Decision Making*, 46 ARIZ. ST. L. J. at p. 2 (forthcoming 2014), papers.ssrn.com/sol3/papers.cfm?abstract_id=2163645 (additional statements about lawyers’ challenges with math).

⁸ This and other interviews were conducted with lawyers whose first law degree was earned outside of the United States; for more information on the research for which the interviews were conducted, see Carole Silver, *The Variable Value of US Legal Education in the Global Legal Services Market*, 24 GEORGETOWN J. OF LEGAL ETHICS 1 (2010); Carole Silver, *States Side Story: ‘I like to be in America:’ Career Paths of International LLM Students*, 80 FORDHAM L. REV. 2383 (2012).

⁹ Edward K. Cheng, *Fighting Legal Innumeracy*, 17 GREEN BAG 2D 271 (2014) (“Numeracy is a fundamental skill for any intelligent, engaged participant in society, and we lawyers ignore it at our peril.”); Howell E. Jackson, *Analytical Methods for Lawyers*, 53 J. LEGAL EDUC. 321, 322 (2003) (“Quantitative skills are essential for lawyers in the twenty-first century.”); Lee Epstein & Gary King, *The Rules of Inference*, 69 U. CHI. L. REV. 1, 116 (2001) (suggesting that law schools teach empirical methods to certain students). See Bryant G. Garth and Joanne Martin, *Law Schools and the Construction of Competence*, 43 J. LEGAL EDUC. 469, 470 (1993) (competence itself is not static, and

actually is happening in law schools in this regard, using data from law students about what they think they are learning in law school related to business and financial matters, and the extent to which they perceive their law school classes require them to use numerical and statistical information generally. The importance of these data goes beyond what they show about the perceptions of a sample of law students' experiences in law school. Rather, they fit into a larger framework for explaining the value of legal education to prospective students and to the hiring market for law graduates.

Section I of this article reviews the need for quantitative literacy generally and specifically in law, as well as the importance of understanding business and financial concepts. Section II describes the data mentioned above, which were gathered in 2013 through a set of survey questions completed by more than 8,000 law students enrolled in 34 U.S. law schools. Section III sets out the survey analyses and findings. In Section IV, we draw on the data and the survey itself to suggest a number of paths going forward that will allow law schools to address students' learning gaps. Approaching these gaps so that improvement can be measured and monitored may lend credibility to law school efforts in the current, challenging environment of U.S. legal education.

I. THE NEED FOR QUANTITATIVE, BUSINESS AND FINANCIAL LITERACY

The importance of numbers in society stands apart from the specific context of law. As Professor Robert Orrill explained, "Increasingly, numbers do our thinking for us. They tell us which medication to take, what policy to support, and why one course of action is better than another. These days any proposal put forward without numbers is a nonstarter. Theodore Porter d[id] not exaggerate when he wr[ote]: 'By now numbers surround us. No important aspect of life is beyond their reach'."¹⁰ The National Council on Education and the Disciplines, which focuses on "core

. . . law schools are important partly because they help change norms about competence.").

¹⁰ Robert Orrill, Forward, *National Council on Education and the Disciplines, Why Numeracy Matters for Schools and Colleges* at p. vii (2003), www.maa.org/sites/default/files/pdf/QL/WhyNumeracyMatters.pdf (referring to Theodore M. Porter, *The Triumph of Numbers: Civic Implications of Quantitative Literacy*, in LYNN STEEN, ED., *WHY NUMBERS COUNT: QUANTITATIVE LITERACY FOR TOMORROW'S AMERICA* (1997)).

literacies” for students from elementary school through college, described the need for quantitative literacy as involving the ability to “understand and correctly interpret disease or unemployment rates, the comparative costs of car or apartment rental agreements, and trends in the composition of the country’s population[.]”¹¹

For lawyers, information must be interrogated, analyzed and explained or translated, whether or not presented in textual form.¹² Ed Cheng, the latest to add to this argument, labels as “legal numeracy” the ability to “treat statistical studies critically.”¹³ Cheng continues: “As the statistician George Box once warned, ‘[r]emember that all models are wrong; the practical question is how wrong do they have to be to not be useful.’”¹⁴ Cheng asserts that “For lawyers, numeracy should be less about numbers per se and more about statistical inference or how to interpret and understand scientific or social scientific studies.”¹⁵ His point is that lawyers should have the ability to “critique . . . what statistical studies mean, and . . . explain the relevant ideas to factfinders.”¹⁶ Indeed, data analytics is gaining attention and investment within the legal industry, including from traditional law firms.¹⁷

¹¹ Richard L. Scheaffer, *Statistics and Quantitative Literacy*, NAT’L COUNCIL ON EDUCATION AND THE DISCIPLINES, WHY NUMERACY MATTERS FOR SCHOOLS AND COLLEGES 145 (2003), www.maa.org/sites/default/files/pdf/QL/WhyNumeracyMatters.pdf.

¹² See generally Gabel, *supra* n. 6 at 255-256 (“[W]e in the legal field glimpse the shortcomings of science through the lens of wrongful convictions. As it stands now, the legal system heavily relies upon the post-conviction process to fix the bad science. In doing so, we treat the effect rather than the cause. In failing to treat the cause, we also discount one of the accessories to the crime of a wrongful conviction - bad lawyering. Bad lawyering includes not only defense lawyers, but also prosecutors and judges. It is my opinion that if legal education began to incorporate more math and science, attorneys would not cover their ears and shield their eyes at the invocation of these words. A broader openness and greater understanding of math and science in the legal field would perhaps lead to fewer wrongful convictions. As a legal profession, unless we appreciate our own role in the process, real reform will remain an illusion.”) (footnote omitted).

¹³ Edward K. Cheng, *Fighting Legal Innumeracy*, 17 GREEN BAG 2D 271, 275 (2014); see also LEILA SCHNEPS AND CORALIE COLMEZ, MATH ON TRIAL (2013), 221 (After outlining ten cases where math played a significant role in developing the wrong conclusions, the authors question the role of math in the courtroom “The obvious disadvantage . . . is that it is only too easy for non-mathematicians, or for mathematicians who are not used to applying math in real life situation, to misunderstand and misuse mathematics.”).

¹⁴ Cheng, *supra* n. 13 (emphasis in original) (quoting from BOX & DRAPER, EMPIRICAL MODEL BUILDING AND RESPONSE SURFACES (1987) at 74).

¹⁵ *Id.* at 272.

¹⁶ *Id.* at 273.

¹⁷ Rebekah Mintzer, *Legal Industry Investing in Data Analytics*, CORPORATE COUNSEL (3.9.2015), avail. at www.corpcounsel.com/id=1202720031578/Legal-Industry-Investing-in-Data-Analytics?

In addition to numeracy skills, lawyers must be familiar with business and financial concepts, as well. These are relevant to lawyers' work because of the role of businesses as clients and employers, the significance of financial matters in public and private enterprise, and the importance of both to the work of managing a law practice.

Research on the legal profession indicates that business clients have assumed an increasingly significant role in the work of a substantial portion of the legal profession.¹⁸ In order to understand the problems and legal issues that cause these clients to seek legal advice, lawyers must understand the language and concepts of business generally, including having at least a rudimentary understanding of how to read simple financial statements. This is certainly relevant for law graduates who plan to work in corporate-focused law firms.¹⁹ But the importance of business and financial literacy is not limited to graduates who join "BigLaw." Lawyers working in other settings also need this foundation in order to understand the problems of their clients. Whether practicing in a government agency or in a solo or small firm setting, lawyers must understand the financial implications of their clients' actions and the contexts in which those decisions arise.

Businesses also employ law graduates to work outside of practicing roles. Data from the National Association of Law Placement reveal that more than 18% of 2013 graduates began their careers with employment in business; this is the high point in a trend of increasing proportions of graduates finding first jobs in business since 2010.²⁰ The American Bar Association's Law Graduate Employment Data indicate that 15.2% of 2013 law

kw=Legal%20Industry%20Investing%20in%20Data%20Analytics&et=editorial&bu=Corporate%20Counsel&cn=20150314&src=EMC-Email&pt=Weekend%20Round-Up.

¹⁸ John P. Heinz, et al., *The Changing Character of Lawyers' Work: Chicago in 1975 and 1995*, 32 LAW & SOCIETY REV. 751 (1998).

¹⁹ At Columbia Law, approximately 90% of all graduates work as corporate lawyers or litigators with corporate clients within five years of graduation. Victor Fleisher, *Deal: Bringing Corporate Transactions into the Law School Classroom*, 2002 COLUM. BUS. L. REV. 475, 480 (2002), available at heinonline.org/HOL/Page?handle=hein.journals/colb2002&div=15&g_sent=1&collection=journals#483. See also Garth and Martin, *supra* n. 9 at 498 (discussing variation in the complex sources for new law graduates' learning of skills and knowledge necessary for practice).

²⁰ NALP CLASS OF 2013 EMPLOYMENT STATISTICS (2014), www.nalp.org/uploads/Classof2013SelectedFindings.pdf ("Employment in business reach a historic high of 18.4% in 2013, and has exceeded 15% since 2010. The percentage of jobs in business has been in the 10-14% range for most of the two decades prior to 2010, except in the late 1980s and early 1990s, when it dipped below 10%. About 28% of these jobs were reported as requiring bar passage, and about 42% were reported as jobs for which a JD was an advantage.")

school graduates took jobs classified as “Business or Industry,” which represented the second highest category of employment after “Law Firm Positions,” and was nearly equal to the 15.4% of 2013 graduates who reported plans to enter either “Government” or “Public Interest.”²¹ Furthermore, a substantial number of law graduates who begin their careers practicing in law firms end up working in business settings according to data from the *After the JD* project (AJD), which has tracked a nationally representative sample of lawyers who were admitted to practice in the U.S. in the year 2000. While only 8% of AJD lawyers worked in business settings within the first couple of years after passing the bar, at the 13-year mark in their careers that proportion rose to 20%.²² Not all of these lawyers are practicing law: slightly more than one-third of the AJD lawyers working in business at the 13-year mark were not practicing law.²³

Finally, lawyers must manage their practices and this also calls for some business acumen.²⁴ The American Bar Association estimates that “of the total number of practicing lawyers in the United States, more than 48 percent are in solo practice.”²⁵ Several law schools, including City University of New York and Seattle University, have set up incubator programs to prepare students for solo practice.²⁶ A few more have partnered with or-

²¹ ABA LAW GRADUATE EMPLOYMENT DATA (2013), www.americanbar.org/content/dam/aba/administrative/legal_education_and_admissions_to_the_bar/statistics/2013_law_graduate_employment_data.authcheckdam.pdf.

²² AFTER THE JD III: THIRD RESULTS OF A NATIONAL STUDY OF LEGAL CAREERS 27 (2014) (“The path to business appears well travelled among this cohort of lawyers, as this sector continues to represent a substantial segment of AJD respondents. While only 8% of AJD respondents began their careers in business, by Wave 2, those working in this sector grew to 19% and, in Wave 3, to 20%.”).

²³ *Id.* See generally ASSOCIATION OF CORPORATE COUNSEL, ACC’S CHIEF LEGAL OFFICERS 2013 SURVEY 4 (2014) www.acc.com/legalresources/loader.cfm?csModule=security/getfile&pageid=1327206 (“Over the past 12 months, the majority (77 percent) of respondents spent most of their time advising executives and participating in strategic corporate issues. The top three non-legal skills many survey respondents are seeking to develop within their department include business management (63 percent), communication (53 percent) and project management (52 percent).”)

²⁴ The concern that the work of lawyers and the legal profession generally are becoming more of a business than a profession is not new. For an insightful analysis, see Garth and Martin, *supra* n. 9 at 502 (finding “support for this story of an increasingly commercialized profession”).

²⁵ American Bar Association, *Solo and Small Firm Lawyers: A Renewed Priority for Bar Associations* (Spring 2011), www.americanbar.org/publications/bar_leader/2010_11/3503/solosmall.html.

²⁶ Ethan Bronner, *To Place Graduates, Law Schools Are Opening Firms*, NY TIMES, March 7, 2013, www.nytimes.com/2013/03/08/education/law-schools-look-to-medical-education-model.html?pagewanted=all; Randy Trick, *Legal Incubators, Helping to Hatch Solo Practices*, NW LAWYER, (September 2013), nwlawyer.wsba.org/nwlawyer/sept_2013#pg20 (“In the last several years, as hiring rates have

ganizations that offer guidance on helping students or new graduates develop their own practices and provide training in managing a law firm.²⁷ Further, as the legal market continues to develop post-2008, particularly with new sorts of firms offering variations on services and fee strategies, among other things, learning to manage the business side of law practice will be important as lawyers build careers in managing legal practice organizations as well as provide legal advice from these organizations.²⁸

Criticism of law schools' failure to ensure that their graduates have basic quantitative skills and an understanding of core business and financial concepts has come from within and outside of the academy. Internal criticism generally is in the context of curricular recommendations; external criticism is part of the debate that centers on the value of legal education and new law graduates.²⁹ For example, a recent article in *The Economist* reported that "[m]any lawyers end up working in business, but their legal education leaves them ill-prepared for this. Apart from a bit of accounting, law school courses typically contain little that is of help in running an enterprise."³⁰ The external and internal are linked in the comments of

weakened and schools have placed more focus on preparing students to practice, the academic community has experimented with ways to address these concerns of students by blending small-business entrepreneurship with low-bono legal access. Programs to help new solos launch their own law firms with the guidance of the schools that used to teach them are cropping up across the nation.").

²⁷ Victoria Pynchon, *Occupy Law School at Solo Practice University*, FORBES, November 20, 2013, www.forbes.com/sites/shenegotiates/2011/11/20/occupy-law-school-at-solo-practice-university/2/; see generally SOLO PRACTICE UNIVERSITY, solopracticeuniversity.com/bridges/schools/ (describing services, partners, and more).

²⁸ Irene Plagianos, *And Now for Something Completely Different: The Future of Legal Education*, THE AM-LAW DAILY (April 11, 2010) (among other things, according to Chester Paul Beach, then Associate GC of United Technologies Corporation, "law school doesn't teach lawyers such practical business management skills as financial literacy and effective executive communication").

²⁹ See, e.g., Ashby Jones and Joseph Palazzolo, *What's A First-Year Lawyer Worth?*, WALL ST. J. (October 17, 2011), www.wsj.com/articles/SB10001424052970204774604576631360989675324 ("Law firms often treat the first two years of an attorney's career as a sort of apprenticeship, albeit a well-paid one Traditionally, law firms have recouped costs of young attorneys by giving them simple jobs – research, proofreading or culling important documents from boxes of paperwork – and passing the costs along to clients in the form of hours billed at \$200 or \$300 a pop. But many companies are now refusing to pay those kinds of bills. According to a September survey for The Wall Street Journal by the Association of Corporate Counsel, a bar association for in-house lawyers, more than 20% of the 366 in-house legal departments that responded are refusing to pay for the work of first- or second-year attorneys, in at least some matters. Almost half of the companies, which have annual revenues ranging from \$25 million or less to more than \$4 billion, said they put those policies in place during the past two years, and the trend appears to be growing.").

³⁰ *Commercial law: Business education for lawyers*, THE ECONOMIST (October 19, 2013) www.economist.com.

Brooklyn Law School Dean Nicholas W. Allard, who is described as “arriv[ing] at Brooklyn . . . from the Washington law firm Patton Boggs.” Allard commented that “‘Law firms were telling us that associates had no business literacy’ ‘The need for business literacy has existed for a long time and graduates had to learn the business basics on the wing,’ Mr. Allard said, ‘but the legal recession has forced law schools to address flaws like this that had been papered over, or not addressed, in flush times.’”³¹

The largest law firms responded to their clients’ concerns by developing new educational programs for recent graduates that address business and basic financial and accounting concepts, which are offered on top of training in legal issues that firms have offered for years. Debevoise & Plimpton and Skadden, Arps, Slate, Meager & Flom are two firms that have instituted training programs in business and finance for new associates to complete prior to beginning practice.³² “Some firms are using business training to give their attorneys a better understanding of clients. At Wilmer Cutler Pickering Hale and Dorr LLP in Boston, Jane Eiselein, director of professional development, says the firm last September piloted an executive education business program for second-year associates taught by Northeastern University. ‘We realized our associates don’t have an inside view of how our clients work’”³³

For lawyers who practice in settings other than BigLaw, third party providers have organized similar training programs. One, offered by the Practicing Law Institute, is titled a “Pocket MBA” and includes topics on financial reporting, finance and accounting terminology, understanding financial statements, and the basics of corporate finance, among other subjects.³⁴ Another is provided by a partnership of the Indiana Bar Association and Butler University’s College of Business and aimed at teaching man-

com/news/business/21588086-effort-turn-lawyers-creators-not-suffocators-business-commercial-law.

³¹ Elizabeth Olson, *Law Students Leave Torts Behind (for a Bit) and Tackle Accounting*, NY TIMES (February 12, 2015), dealbook.nytimes.com/2015/02/12/law-students-leave-torts-behind-for-a-bit-and-tackle-accounting/.

³² Vanessa O’Connell, *Trendy New Perk (or Punishment?) for Law Firm Junior Lawyers: Business Education*, WALL ST. J., Aug. 22, 2011, blogs.wsj.com/law/2011/08/22/trendy-new-perk-or-punishment-for-law-firm-junior-lawyers-business-education/.

³³ Alina Dizik, *Law Firms Embrace Business School 101*, WALL ST. J., May 20, 2009, online.wsj.com/news/articles/SB124277243918636539.

³⁴ See PLI, *Pocket MBA Summer 2015: Finance for Lawyers and Other Professionals*, described at www.pli.edu/Content/Seminar/Pocket_MBA_Summer_2015_Finance_for_Lawyers/_/N-4kZ1z129ld?Ns=sort_date%7c0&ID=225539.

agement and financial skills training to mid-level associates.³⁵

Certain law firms also have developed opportunities for mid-level and partner-track lawyers to learn about business matters. For example, Baker & McKenzie, Quarles & Brady, Nixon Peabody, WilmerHale, and Addleshaw Goddard.³⁶ Milbank Tweed, took a slightly different approach by establishing a “collaboration with Harvard Law School . . . meant to give its [mid-level] associates training in business issues, in addition to legal issues, [including] accounting, economics, finance, and negotiation – areas clients themselves tend to care deeply about.”³⁷

But these programs will not reach all law graduates. Only a small segment of new lawyers practice with firms in the “BigLaw” category and third-party programs often are quite costly.³⁸ Perhaps in response to this gap, as well as to address the concerns of prospective employers of their students, law schools have moved to fill this void.³⁹ A survey of law school curricula published in 2012 reported an increase in business and corporate law offerings over the period from 2002 to 2010, as well as in related skills courses and transactional and business-focused clinics.⁴⁰ Certain schools have gone further. NYU added a mandatory first-year course on financial literacy.⁴¹ Cornell offers a one-credit intensive weekend class that “explains business concepts and gives students a fundamental business vocabulary.”⁴² Others have integrated similar topics into their transactional

³⁵ Marilyn Odendahl, *Bar introduces business school for lawyers*, THE INDIANA LAWYER (Aug. 15, 2012), www.theindianalawyer.com/bar-introduces-business-school-for-lawyers/PARAMS/article/29441 (describing the program as “a five-seminar Business School for Lawyers.”).

³⁶ Alina Dizik, *Law Firms Embrace Business School 101*, WALL ST. J., May 20, 2009, online.wsj.com/news/articles/SB124277243918636539.

³⁷ Vanessa O’Connell, *New Solution to Associate Woes: A Harvard Accounting Class*, WALL ST. J., Feb 9, 2011, blogs.wsj.com/law/2011/02/09/new-solution-to-associate-woes-a-harvard-accounting-class/?blog_id=14&post_id=39056.

³⁸ See *supra* n. 34 (noting fees of \$1,695 for PLI’s two-day seminar during the summer of 2015).

³⁹ See generally *Commercial law: Business education for lawyers*, THE ECONOMIST (October 19, 2013), www.economist.com/news/business/21588086-effort-turn-lawyers-creators-not-suffocators-business-commercial-law.

⁴⁰ Catherine Carpenter, *SURVEY OF LAW SCHOOL CURRICULA 2002-2010 74-75* (2012).

⁴¹ Alexandra Tilsley, *Law Schools Get a New Look*, INSIDE HIGHER ED, Oct. 18, 2012, www.insidehighered.com/news/2012/10/18/nyu-announces-changes-its-law-school-curriculum#sthash.0zlQOD2q.dpbs.

⁴² Andrew Clark, *Stout Teaches New Business ‘Boot Camp’ for Law Students*, CORNELL LAW SCHOOL NEWS (October 29, 2013), www.lawschool.cornell.edu/spotlights/Stout-Teaches-New-Business-Boot-Camp-for-Law-Students.cfm (quoting Professor Lynn Stout).

offerings,⁴³ which in turn have increased in recent years. The 2012 curriculum survey mentioned above reports that approximately 50% of schools offer a specialization or certificate in business law, although the survey did not gather information on whether these specializations teach quantitative skills or delve into business and financial matters along with the law regulating businesses.⁴⁴ Relatedly, many law schools have expanded the number of business law courses they offer, including adding business and finance-related seminars.⁴⁵

These law school responses are important indications of an effort to address students' shortcomings. But if law schools do no more than approach the problem by offering another course, they will have missed an opportunity to develop a strategy that satisfies concerns for efficiency and effectiveness. The resource-constrained environment that characterizes legal education today argues for focusing on efficiency in developing new course offerings,⁴⁶ and it is possible that at least certain segments of the law student population enter law school with numeracy and business liter-

⁴³ Victor Fleischer, *Deals: Bringing Corporate Transactions into the Law School Classroom*, 2002 COLUMBIA BUS. L. REV. 475, 495 (2002) (describing Columbia University Law School's business basics segment of its transactional curriculum, which they call "B-School Lite" and is described as "provid[ing] students with a more user-friendly, accessible, somewhat simplified version of some of the financial concepts taught in business school. The Deals courses do not purport to make students into finance wizards or to substitute for business school, but rather to familiarize students with fundamental economic concepts and goals and the common terminology that their corporate clients will use.").

⁴⁴ Catherine Carpenter, SURVEY OF LAW SCHOOL CURRICULA 2002-2010 70-71 (2012) (47 schools in the 2010 survey of law school upper division curriculum noted that they had either a specialization or certification in business law, with an additional four schools offering transactional skills).

⁴⁵ *Id.* at 74-75 (55 school reported in 2010 that they had a significant increase in Business/Corporate Law curricular offerings. Additionally, 125 schools reported that they offered Transactional Skills as a professional skills course offering).

⁴⁶ See, e.g., *Washington and Lee School of Law, School of Law Strategic Transition Plan* (Feb. 9, 2015), www.wlu.edu/presidents-office/messages-to-the-community/message-to-the-law-school-community/strategic-transition-plan (describing senior faculty salary reductions, elimination of certain administrative and staff positions, and cuts in budget for visiting and adjunct faculty); Peter Schworm, *Waning Ranks at Law Schools*, BOSTON GLOBE (July 6, 2014), www.bostonglobe.com/metro/2014/07/05/law-school-enrollment-fails-rebound-after-recession-local-colleges-make-cuts/rR7dYqwBsrOeXPbS9ibqtN/story.html ("At New England Law School in Boston, first-year enrollment has dropped 40 percent since fall 2010, while Western New England saw a 28 percent decline. In response, New England Law School last year froze wages, offered buyouts to some faculty members, and reduced its administrative staff. The dean, John O'Brien, took a voluntary pay cut of 25 percent."); Ashby Jones & Jennifer Smith, *Amid Falling Enrollment, Law Schools are Cutting Staff*, WALL ST. J., July 15, 2013, online.wsj.com/news/articles/SB10001424127887323664204578607810292433272 ("Having trimmed staff, some schools are offering buyouts and early retirement packages to senior, tenured professors . . .").

acy – making it unnecessary for law schools to offer additional foundation-level education. But law schools have no simple mechanism for understanding a student’s quantitative or business literacy. There are no criteria on the LSAT⁴⁷ and applications generally do not require a discussion of relevant experience or background. This leaves schools without a baseline for developing and monitoring new educational initiatives. Perhaps most important, without a strategic approach to this education gap, law schools will fail to respond to the metric-oriented mindset that is at least in part the basis for the need for numeracy skills and business acumen in the first place, and which also is reflected in the focus on assessment in higher education generally.

II. DATA ON LAW STUDENTS’ EDUCATIONAL EXPERIENCES: LEARNING ABOUT NUMBERS, BUSINESS, AND FINANCIAL CONCEPTS

In this article we draw on data gathered in 2013 by the Law School Survey of Student Engagement (LSSSE). LSSSE is an annual survey used to assess the extent to which law school students are exposed to and participate in a variety of educational practices identified as effective by research on higher education generally.⁴⁸ The survey presents law students with questions about a wide variety of aspects of their law school experience,

⁴⁷ *About the LSAT*, www.lsac.org/jd/lsat/about-the-lsat (noting that the LSAT “provides a standard measure of acquired reading and verbal reasoning skills that law schools can use . . . in assessing applicants.” The test is intended to measure reading comprehension, analytical reasoning, and logical reasoning.). In comparison, the GMAT and MCAT exams also assess quantitative reasoning. See *The GMAT Exam: Quantitative Section*, www.mba.com/us/the-gmat-exam/gmat-exam-format-timing/ (the GMAT exam contains a 75 minute section of quantitative reasoning which “measures your ability to analyze data and draw conclusions using reasoning skills.” Additionally the thirty minute Integrated Reasoning section, “measures your ability to evaluate information presented in multiple formats from multiple sources – skills you need to succeed in our technology advanced, data driven world.”); *Preparing for the MCAT*, ASS’N OF AMERICAN MEDICAL COLLEGES, www.aamc.org/students/applying/mcat/prepare/ (describing quantitative applied sections regarding the hard sciences and a section on reasoning using quantitative data).

⁴⁸ Carole Silver, Louis Rocconi, Heather Haeger, Lindsay Watkins, *Gaining From the System: Lessons From the LawSchool Survey of Student Engagement about Student Development in Law School*, 10 UNIV. OF ST. THOMAS L. J. 286 (2012); Cassandra M.S. Florio & Steven J. Hoffman, *Student Perspectives on Legal Education: A Longitudinal Empirical Evaluation*, 62 J. LEGAL EDUC. 162 (2012); George Kuh & Patrick O’Day, *Assessing What Matters in Law School: The Law School Survey of Student Engagement*, 81 IND. L.J. 401 (2006).

such as the time and effort they invest in preparing for and participating in class; their discussions, interactions and relationships with students, faculty and staff; and their participation in certain law school activities and groups.⁴⁹ In each LSSSE administration, several sets of experimental questions are posted to a subset of respondents; experimental questions might examine new content or information, test potential new questions, or test the validity of existing questions. In 2013, one set of experimental questions focused on students' exposure to and use of financial, business, and quantitative activities in law school.

Responses to the experimental question set were received from 8,302 law students enrolled in 34 U.S. law schools.⁵⁰ Approximately half of the respondents were male and half were female. Over 90% of respondents were enrolled in law school full-time. Roughly one-third were each of 1Ls, 2Ls and 3Ls.⁵¹ About three-quarters of respondents identified as White, 6% as Asian/Asian-American, 6% as Hispanic, 6% as Black/African-American, and 6% identified as another race/ethnicity (e.g., Native American) or multiracial. Table 1 sets out a comparison of the demographic makeup of students responding to LSSSE in 2013 and their law schools to the national profile of American Bar Association approved law schools. Generally, the respondent group reflects the national profile of law students and law schools except that the respondent group has more White students, and law schools with enrollments less than 500 students tend to be over-represented.

⁴⁹ The survey is available on the LSSSE website, lsse.indiana.edu/pdf/LSSSE_main_US_Q.pdf.

⁵⁰ LSSSE also routinely includes Canadian law schools, but these were excluded from this experimental question set. For information on law schools that have participated in LSSSE, see lsse.indiana.edu/schools.cfm.

⁵¹ Approximately 1% of respondents were 4Ls, indicating enrollment in an evening or part-time program.

TABLE 1: REPRESENTATIVENESS OF LAW STUDENTS
AND SCHOOLS IN ANALYTIC SAMPLE

	Analytic sample	ABA schools not in sample	All ABA schools ⁵²
Male students	49.5%	53.1%	53.0%
African-American/Black students	6.1%	8.2%	8.1%
Asian/Asian-American/Pacific Islander students	6.0%	7.6%	7.5%
Hispanic/Latino students	6.1%	11.0%	10.6%
White students	76.1%	69.6%	70.2%
Other race-ethnicity/multiracial	5.6%	3.5%	3.5%
Enrollment size: Less than 500	47.1%	28.6%	31.8%
Enrollment size: 500 – 900	41.2%	51.8%	49.8%
Enrollment size: Greater than 900	11.8%	19.6%	18.4%
Median Undergraduate GPA	3.38	3.37	3.37
Median LSAT score	156.1	155.7	155.9

The experimental question set relating to quantitative and business-related literacy was comprised of five questions that addressed various aspects of students' exposure to and use of quantitative, business and financial information. Three questions asked students about learning business or financial concepts and skills. One of these asked students how much their law school helped them acquire or develop financial or business skills (response options: very much, some, very little, none)(Q2). Another asked students when they learned to read and understand a financial statement (balance sheet and/or income statement)(response options: before coming to law school/through activities unrelated to law school, in a law school class or other law school sponsored activities, not applicable/never)(Q3). A third asked students how often, during the current school year, they read a national business or finance journal, newspaper or web-based publication (such as the *Wall Street Journal*, *Forbes* or *Yahoo Finance*) (response

⁵² The national profile of all American Bar Association (ABA) approved law schools is based on data from the ABA for the 2012-2013 academic year. See *Employment Statistics*, AMERICAN BAR ASS'N, www.americanbar.org/groups/legal_education/resources/statistics.html; *ABA Required Disclosures*, AMERICAN BAR ASS'N, www.abarequireddisclosures.org/.

options: very often, often, sometimes, never) (Q4).

A second topic covered was students' use of quantitative information (Q1). This was a four-part inquiry, adapted from the National Survey of Student Engagement,⁵³ that asked students how often, during the current school year, they (i) discussed the meaning of numerical, graphical, or statistical information, (ii) evaluated conclusions others have reached that were based on numerical, graphical or statistical information, (iii) explained in writing the meaning of numerical, graphical or statistical information or (iv) used numerical graphical or statistical information to help analyze an issue (such as damages). Response options for these items were very often, often, sometimes and never.

The fifth question focused on students' perceptions about the emphasis of their coursework in law school. Students were asked how much their coursework involved learning to understand (i) numerical, graphical or statistical information, (ii) business concepts or (iii) financial concepts (response options: very much, some, very little, not at all)(Q5). Questions and response options are set out in the Appendix.

III. ANALYSIS AND FINDINGS

In this section, we review the results of the experimental survey questions. We took an exploratory approach to analyze these data; we investigated overall trends reported by respondents and examined differences among sub-populations of students, including, for example, differences by year in law school, gender and race/ethnicity. We also explored the relationship of responses to these experimental questions with other reported experiences in law school as reflected in data captured through the LSSSE core survey.

We begin our discussion of the data by focusing on law students' use of numerical, graphical or statistical (NGS) information (identified above as Q1). Generally, respondents reported that they do not use NGS information much at all. The average scores on these items ranged from 1.63 to 1.90; possible scores range from 1 to 4 with a 1 indicating an average response of 'never,' 2 indicating an average response of 'sometimes,' 3 indicating an average response of 'often' and 4 indicating an average response of 'very often.' As reported in Table 2, approximately one-third of respondents

⁵³ Amber D. Dumford and Louis M. Rocconi, *Development of the quantitative reasoning items on the National Survey of Student Engagement*, 8 NUMERACY (2015), [dx.doi.org/10.5038/1936-4660.8.1.5](https://doi.org/10.5038/1936-4660.8.1.5).

reported *never* discussing, evaluating or using NGS information, and half of all respondents reported that they never explained in writing the meaning of NGS information – an activity that involves thinking through how to explain numbers with words. Only between 10% and 14% of students reported doing any these activities often or very often.⁵⁴

TABLE 2: FREQUENCIES FOR STUDENTS' USE OF NGS INFORMATION

	Discussed the meaning of NGS information	Evaluated conclusions others have reached based on NGS information	Explained in writing the meaning of NGS information	Used NGS information to analyze an issue
1 Never	30%	34%	50%	34%
2 Sometimes	55%	52%	40%	52%
3 Often	11%	11%	8%	11%
4 Very often	3%	3%	2%	3%

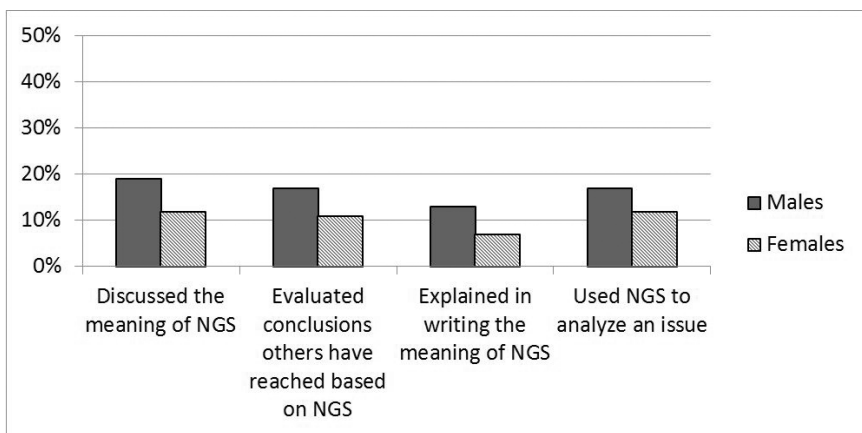
We examined differences in students' reported use of NGS information by year in law school, gender and race/ethnicity. First-year students reported statistically significant less use of NGS information than second-year students on three of the four NGS items: discussing the meaning of NGS information, evaluating conclusions of others based on NGS information, and explaining the meaning of NGS information in writing. This is not particularly surprising in light of the nearly universal focus of first-year classes on learning legal analysis.⁵⁵ On the other hand, first-year students reported using NGS information to help analyze an issue *more often* than their second- and third-year counterparts. Additional research is necessary to clarify whether this difference relates to a substantive difference or to the parenthetical example in the phrasing of the sub-question that mentioned damages as one context in which such use of information

⁵⁴ These results are consistent with research on undergraduate students about their use of quantitative information, where students' academic majors correlate with significant differences in quantitatively-focused activities. Not surprisingly, students in science, technology, engineering and mathematics disciplines report the most frequent use while students in the arts and humanities report the least. Louis M. Rocconi, Amber D. Lambert, Alexander C. McCormick, Shimon A. Sarraf, *Making College Count: An Examination of Quantitative Reasoning Activities in Higher Education*, 6 NUMERACY (2013), dx.doi.org/10.5038/1936-4660.6.2.10; Dumford and Rocconi, *supra* n. 53.

⁵⁵ See Sullivan, et al., *supra* n. 1.

might occur, or to another factor. Differences also were found with regard to gender and race-ethnicity. As indicated in Figure 1, males reported using NGS information more than females, which parallels findings from research on undergraduate students.⁵⁶ Additionally, Asian students reported using NGS information more often than their African-American/Black and Hispanic counterparts (see Figure 2).⁵⁷

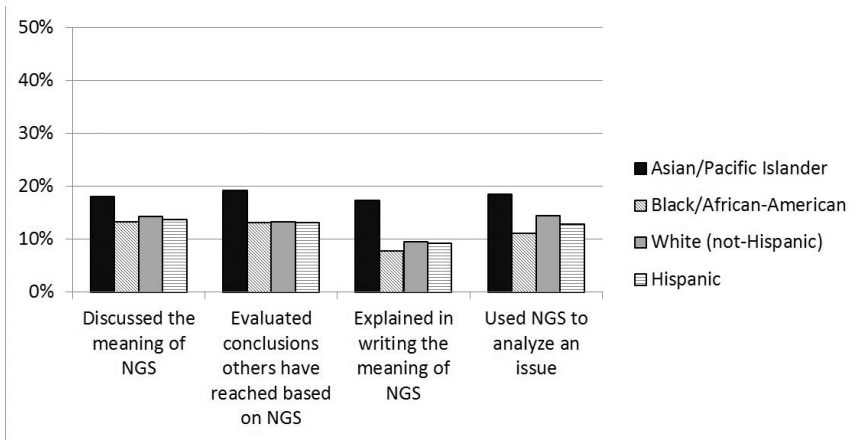
FIGURE 1: PERCENT USING NGS INFORMATION
OFTEN OR VERY OFTEN, BY GENDER



⁵⁶ Differences between males and females were statistically significant for all four quantitative items (all p-values < .001; Cohen's d effect sizes ranged from d=.20 for "used NGS to analyze an issue" to d=.26 for "explained in writing the meaning of NGS"). When examining undergraduate students' use of quantitative information in college, both Rocconi et al., *supra* n. 54, and Dumford & Rocconi, *supra* n. 53, have noted males reported more-frequent use of quantitative information than females. In addition, national assessments of adult numeracy have found significant gaps in quantitative literacy between males and females. See M. Kutner, E. Greenburg, Y. Jin, B. Boyle, Y. Hsu, and E. Dunleavy, *Literacy in everyday life: Results from the 2003 National Assessment of Adult Literacy*, U.S. DEPARTMENT OF EDUCATION, NATIONAL CENTER FOR EDUCATIONAL STATISTICS, nces.ed.gov/Pubs2007/2007480_1.pdf.

⁵⁷ A Oneway ANOVA with Tukey post-hoc tests was used to test for differences in students use of NGS information by race-ethnicity. Results indicated statistically significant (p<.05) pair-wise differences between Asian students and Black-African American and Hispanic students on all four NGS items. Cohen's d effect size differences between Asian and Black/African-American students ranged from d=.23 for "used NGS to analyze an issue" to d=.35 for "explained in writing the meaning of NGS." Effect size ranges for differences between Asian and Hispanic students ranged from d=.16 for "used NGS to analyze an issue" and d=.28 for "explained in writing the meaning of NGS." National assessments of adult numeracy have also demonstrated differences between race-ethnic groups in their quantitative literacy abilities; see Kutner et al., *supra* n. 56.

FIGURE 2: PERCENT USING NGS INFORMATION
OFTEN OR VERY OFTEN, BY RACE---ETHNICITY



Students who identified a substantive area of specialization related to business – that is, corporate and securities, tax or bankruptcy law – also reported more frequent use of NGS information in each of the aspects explored in this question, although their use still was limited (average response was “sometimes” – or 2 on a 4-point scale). This suggests either that students focused on these business law fields are more attuned to the use of NGS information in their classes, or that classes on these topics actually involve greater use of NGS information than other courses. In either case, it reflects a rather limited view of the use of NGS information in law school, in which the importance of such information for policy analyses or in assessing potential liability, for example, remains largely unrecognized.

Finally, a modest, positive correlation was found between students’ use of NGS information and LSSSE’s aggregate measures of law school environment, student-faculty interaction, and learning to think like a lawyer.⁵⁸ This suggests that students’ use of NGS information does not discourage them in their more traditional law school activities.

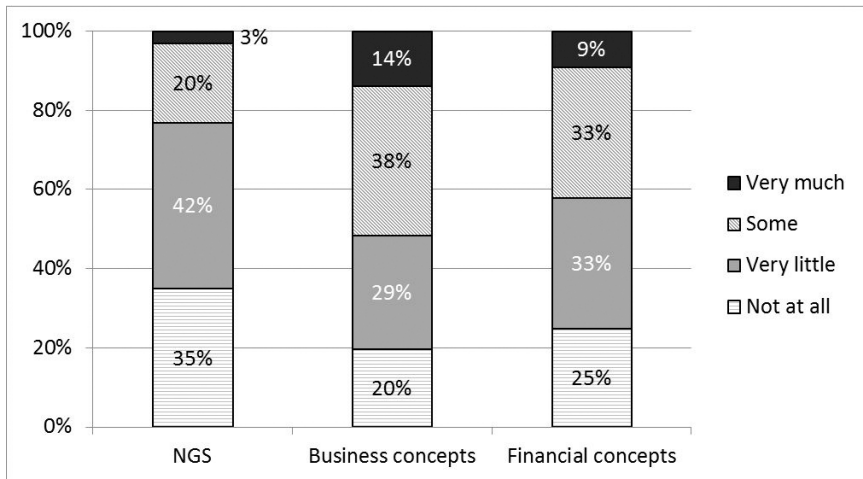
A related question asked students how much their coursework involved learning to understand numerical, graphical or statistical information, or business or financial concepts (Q 5). Overall results are reported in Figure

⁵⁸ Polychoric correlations of .31, .26, and .22 respectively.

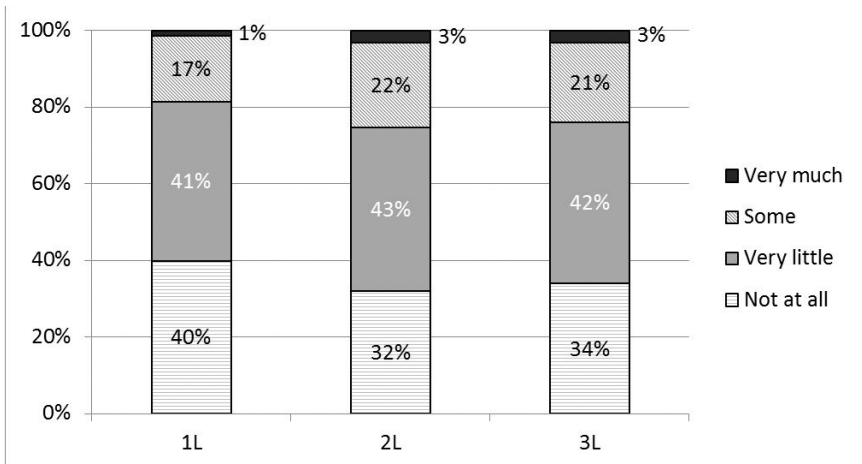
3, with differences by year in law school explored in Figures 4-6. Slightly more than 40% of all respondents indicated that their courses substantially involved⁵⁹ learning to understand financial concepts and over half (52%) indicated that their coursework substantially involved learning business concepts.

In contrast, however, only 23% of respondents indicated substantial emphasis in learning to understand NGS information. Put another way, over three-fourths (77%) of students reported their coursework involved learning to understand NGS information only very little or not at all (Figure 3) and, as Figure 4 reveals, only slight differences based on year in law school are noticeable with regard to coursework involving NGS information.

FIGURE 3: COURSEWORK EMPHASIS ON LEARNING TO UNDERSTAND NGS INFORMATION, BUSINESS CONCEPTS OR FINANCIAL CONCEPTS



⁵⁹ “Substantial” results from combining the top two response categories, “very much” and “some.”

FIGURE 4: COURSEWORK EMPHASIS ON NGS INFORMATION,
BY YEAR IN LAW SCHOOL

Students consider their coursework to emphasize learning business and financial concepts much more than NGS information. There were significant differences between first year and upper-level students with regard to course emphasis on both business and financial concepts (Fig. 5-6), which likely reflects the mandatory first year curriculum's emphasis on case and textual analysis.⁶⁰ The greater percentage of second year students reporting substantial emphasis on business and financial concepts compared to third year students may reflect their course choices – for example, the prevalence of basic corporations and tax courses – or perhaps this simply is the reaction of second year students who largely are free to pursue their own interests rather than be constrained by a prescribed curriculum.

⁶⁰ Note that certain variations between participating law schools may suggest a relationship to differences in 1L curricula, although additional research is necessary to confirm this.

FIGURE 5: COURSEWORK EMPHASIS ON BUSINESS CONCEPTS,
BY YEAR IN LAW SCHOOL

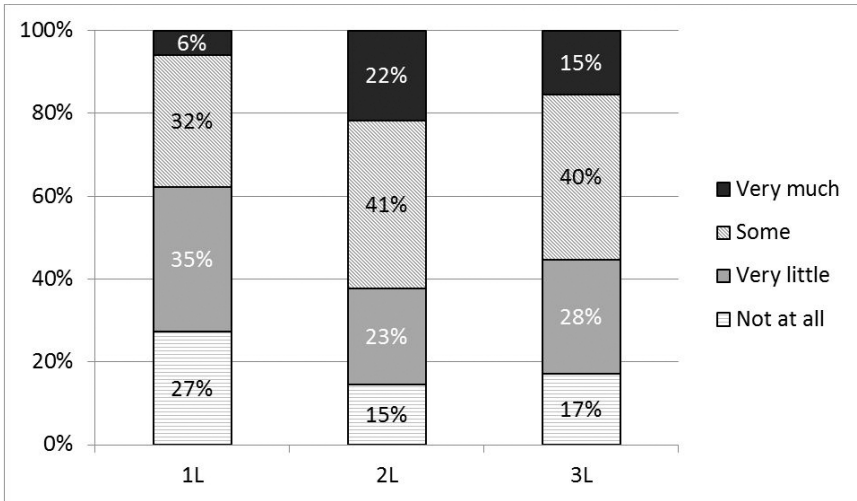
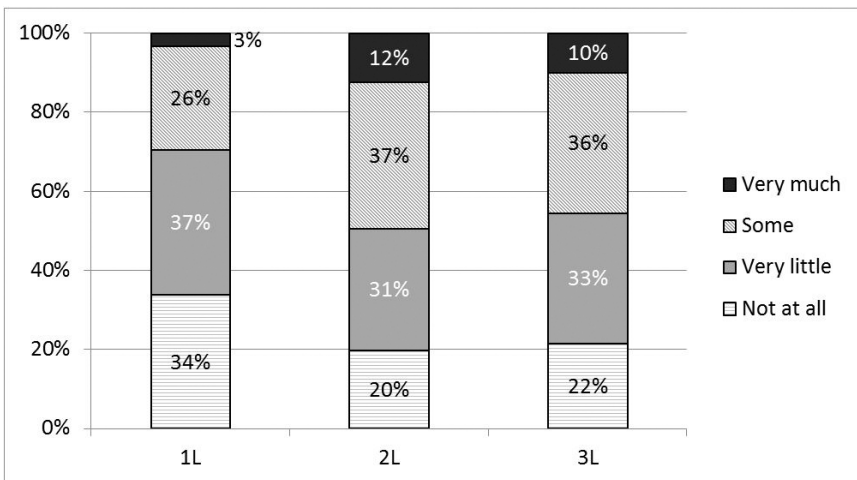


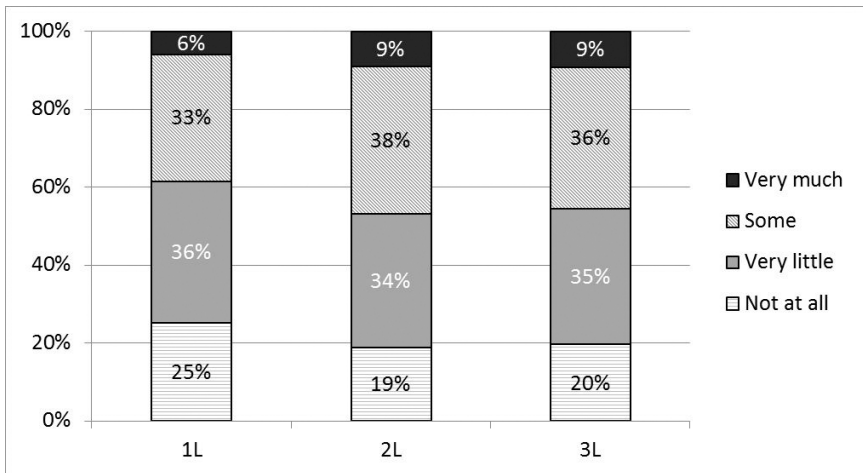
FIGURE 6: COURSEWORK EMPHASIS ON FINANCIAL CONCEPTS,
BY YEAR IN LAW SCHOOL



Students also were asked how much their law school helped them to acquire or develop financial or business skills. Overall, 21% of students said not at all while only 8% reported that their law school was very helpful in this regard. Figure 7, which displays these results by year in law

school, shows that there is little variation over the three years. But interest in a particular area of law separates students with regard to their perception of law school's usefulness in helping them to acquire these skills: when examined by the substantive specialty students expect to focus on in their careers, students who indicated an intention to practice in the field of tax, corporate and securities, or trusts and estates law also reported higher responses regarding law school helping them in acquiring or developing financial or business skills.⁶¹

FIGURE 7: PERCENT REPORTING THAT LAW SCHOOL HELPED TO ACQUIRE OR DEVELOP BUSINESS OR FINANCIAL SKILLS, BY YEAR IN LAW SCHOOL



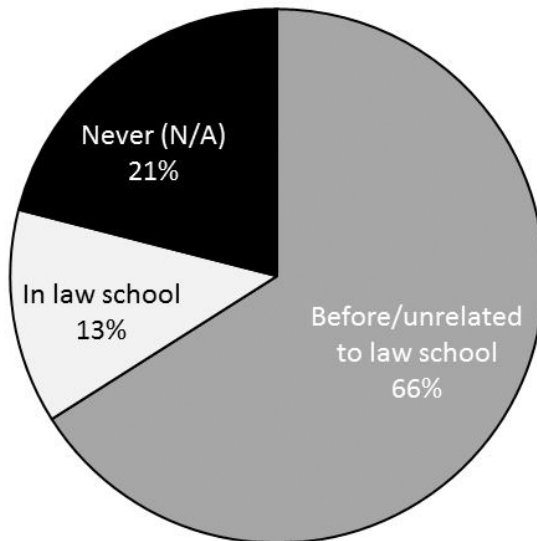
To supplement the questions focused on course emphasis, we also asked students when they learned to read and understand a financial statement. As Figure 8 reports, two-thirds of respondents reported that they had learned to read and understand a financial statement either before coming to law or through activities unrelated to law school.⁶² This high

⁶¹ Between 53% and 60% of respondents who indicated their primary specialty as tax, corporate and securities, or trusts and estates reported their law school substantially (combination of “very much” and “some”) helped them acquire or develop business or finance skills.

⁶² At only two of the 34 schools in the experimental sample set did fewer than 50% of students report that they learned to read and understand a financial statement prior to or outside of law school. Approximately 48% of respondents at each of those two schools indicated they learned this prior to or outside of law school.

percentage reflects students' perceptions of their own abilities as they answered the survey and is not an objective assessment of proficiency. In fact, law school faculty who teach transactional courses that involve understanding financial statements were skeptical of these responses and suggested that students may have overstated their abilities.⁶³ However, the results are generally consistent with another study of numeracy skills of law students. There, the focus was on University of Illinois law students, and researchers found that approximately 57% of students both self-reported high confidence in math and correctly answered a three-question numeracy test that served as an objective assessment of their numeracy skills. Other studies, too, have found a significant correlation between self-evaluation tests regarding numerical understanding and objective problem test scores.⁶⁴

FIGURE 8: PERCENT REPORTING WHEN THEY FIRST LEARNED TO READ AND UNDERSTAND A FINANCIAL STATEMENT

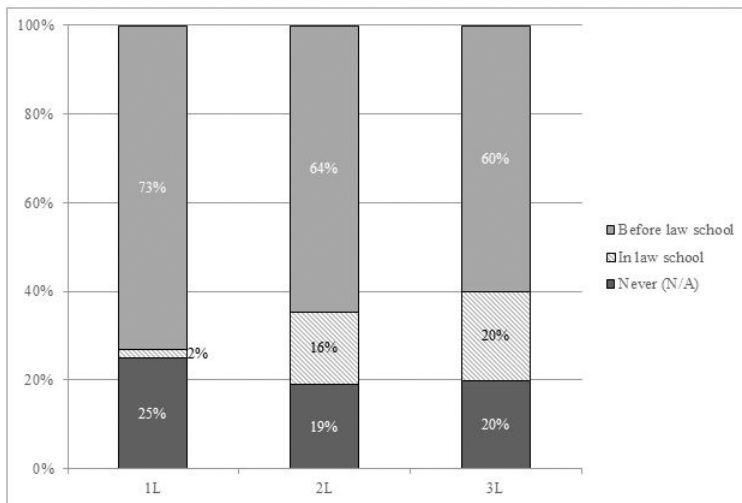


⁶³ Discussion at “Educating the Transactional Lawyer of Tomorrow,” Emory University Law School (June 2014), information at law.emory.edu/academics/academic-programs/center-for-transactional-law-and-practice/conferences.html.

⁶⁴ See Arden Rowell and Jessica Bregant, *Numeracy and Legal Decision Making*, 46 ARIZONA ST. L.J. at 9-10 (forthcoming 2014), papers.ssrn.com/sol3/papers.cfm?abstract_id=2163645 (“Math confidence is sometimes used as a subjective numeracy-related measure.”).

Very few first year students (2%) reported learning to read a financial statement in law school or through law school sponsored activities, compared to approximately 16% of second year students and 20% of third years (Figure 9). By far the largest group of respondents in all three years reported learning about financial statements prior to or outside of law school (73% of 1Ls, 64% of 2Ls and 60% of 3Ls). But of those who indicated learning to read financial statements during law school, substantially more were upper level law students than first year students. In addition, this group also was more likely to indicate that they spent more time during law school discussing the meaning of NGS information. This could be because they were in different classes that were more focused on financial literacy or – perhaps more likely – that this baseline of knowledge sensitized them to and enabled them to feel confident in engaging with NGS information in other courses.

FIGURE 9: PERCENT REPORTING LEARNING TO READ AND UNDERSTAND A FINANCIAL STATEMENT, BY YEAR IN LAW SCHOOL

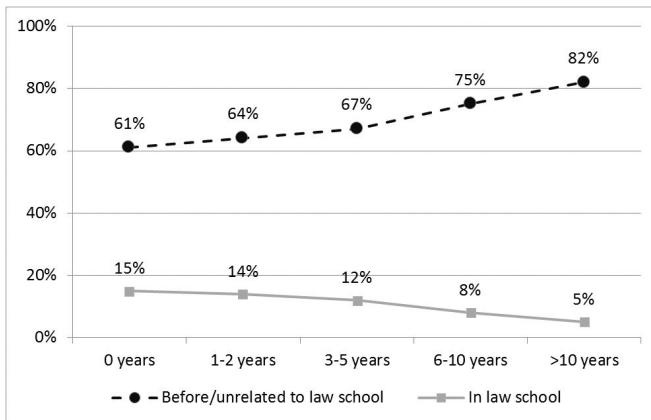


Additional differences also were evident among various segments of the respondent population. For example, more male students indicated having learned to read a financial statement before or outside of law school (69%) compared to female students (63%). On the other hand, female students reported a slightly higher rate of never having learned these skills (25%)

compared to their male counterparts (20%).⁶⁵ It is unclear whether a self-reporting bias or another factor, such as differences in students' backgrounds or undergraduate majors, for example, explain these variations.⁶⁶

Older students also reported a higher level of financial literacy with regard to reading and understanding financial statements. The proportion of students indicating learning to read a financial statement before or unrelated to law school increased as the number of years between earning an undergraduate degree and attending law school increased; relatedly, the inverse relationship existed for those who reported learning to read a financial statement in law school (Figure 10). This difference may reflect the post-college work experience of older respondents, and suggests the practical relevance of NGS information in the context in which such students worked, but more research is necessary to confirm the underlying explanations for these differences.

FIGURE 10: PERCENT REPORTING WHEN LEARNING TO READ A FINANCIAL STATEMENT, BY YEARS BETWEEN UNDERGRADUATE DEGREE AND LAW SCHOOL



⁶⁵ $\chi^2 = 50$, $p < .001$; standardized residual for learning to read a financial statement before coming to law school equals |5.9| and standardized residual for never (n/a) learning to read a financial statement is |7.0|.

⁶⁶ See, e.g., Women also only make up 44% of undergraduate business majors, and incoming undergraduate freshman class of 2012 that number had fallen to 39% female. Additionally, men outnumber women 2:1 in finance, entrepreneurship and information management majors. *Why so Few? Women in Science, Technology, Engineering, and Mathematics*, AMERICAN ASS'N OF UNIVERSITY WOMEN (Feb. 2010), www.aauw.org/files/2013/02/Why-So-Few-Women-in-Science-Technology-Engineering-and-Mathematics.pdf.

Finally, the survey asked students about their reading habits relating to a “national business or financial journal, newspaper or web-based publication.” The question was aimed at uncovering any educationally-relevant activities outside of law school that would support learning about business and financial matters, and expose students at least occasionally to numerical, graphical and statistical information. Reading such material is perhaps the traditional method for law students and lawyers to learn about the world of business and finance generally.

Overall, slightly more than one-quarter (28%) of all respondents reported frequently⁶⁷ reading a business or finance focused publication, and over one-third of respondents (35%) reported never reading such a publication. But there were significant variations among groups of respondents. For example, the percentage of students frequently reading business journals increased as students progressed through law school (25% of 1Ls, 29% of 2Ls, 30% of 3Ls, and 38% of 4Ls), and correspondingly the percentage never reading decreased (40% of 1Ls, 30% of each of 2Ls, 3Ls, and 4Ls). This suggests students’ transition into habits that are related to a professional identity.

A larger proportion of women reported never reading a business or finance journal (45% of women compared with 25% of men). Moreover, 39% of men report frequently reading a business or finance journal, newspaper or web-based publication compared with only 18% of women. Additionally, Asian Pacific students reported a significantly higher engagement with business publications than any other ethnic/racial group.

Not surprisingly, a positive relationship existed between how often students read a business or financial journal and the time they spent reading on their own generally in law school. Those who reported reading a business or finance journal very often spent on average 5.2 hours per week reading on their own (i.e., not assigned reading) compared with 2.8 hours for those who reported never reading a business or finance journal. We also noticed a relationship between how often students read a financial or business journal and their reported area of legal specialization. Students who reported their primary specialty as tax, corporate and securities, non-legal or bankruptcy indicated that they read a financial or business journal the most frequently while those specializing in family and juvenile, public

⁶⁷ “Frequently” results from combining the top two response categories, “very often” and “often.”

interest or criminal law reported the lowest.

There is good news and bad news from the findings reported here with regard to the task of helping students learn how to understand the facts involved in their future work as lawyers. On the positive side, the data indicate that a substantial proportion of responding students recognize the importance of business concepts in law school, and nearly as many also appreciate the relevance of financial concepts. Business and financial concepts are important for multiple purposes, including understanding clients' problems and the organizational context of employers ranging from business corporations to non-profits, law firms and governmental entities. But this good news may be limited to the superficial because law schools appear not to be teaching students the tools to understand business and financial matters – that is, they are not helping students understand the language and structure of financial statements, and many students do not learn this elsewhere. Perhaps even more troubling is that law students are not learning the connection between their legal education and the importance of learning to navigate and understand numerical, statistical and graphical information. To prepare students to be effective in society, whether in practice, in business or in shaping public policy, learning to understand and use information, regardless of the form in which it is presented, is a crucial element of legal education. These data reveal that there is much more that must be done in this regard.

IV. LESSONS AND DIRECTIONS

Several general trends emerge from these data. Overall, students do not report learning to use NGS information in law school, and to the extent they do, this tends to occur after the first year. But the focus of the first year curriculum also is highly relevant to information typically described in NGS terms. This includes material related to presenting a case as well as information about the systems that law students study, such as crime and policing, prison and punishment generally, and rates of settlement and plea bargaining, to name just a few. Whether or not a casebook includes such information, the policy implications of first year topics are laden with NGS information. The question for law schools is whether it is important for faculty to encourage students to explore this information. Is learning to understand and critically assess NGS information legitimately

part of the first year curriculum? Our analysis indicates that students are not taking these lessons from law school, if in fact they are offered there. Consequently, law schools have an opportunity to embrace this void while simultaneously broadening their appeal along and the potential impact of a legal education. Indeed, taking on this approach will help to keep legal education current and ensure that law graduates are able to obtain and maintain positions of influence, which likely will require facility with numbers as numbers increasingly become central to policy and decision-making.

Compared to NGS, much more learning is recognized by students with regard to business and financial concepts. Nevertheless, for most respondents, law school failed to help them understand the basic language of business – the terms of a financial statement. Such an understanding is an important factor for a number of aspects of professional activity, from representing clients to managing a practice and understanding a corporate employer, for example.

There also is a troubling pattern of gender difference in the data. Significantly more women reported never reading material related to business and financial matters compared to men. At the same time, more female students also reported never learning to understand a financial statement compared to males, while fewer women learned to read a financial statement before or outside of law school. Finally, women also were less likely to report using NGS information in law school compared to their male classmates. Together, these differences suggest that women are at a disadvantage with regard to learning about the worlds of business and finance in law school, and also are not keeping up with regard to developing comfort in using NGS information. Combined, these differences risk putting women at a disadvantage in their early careers, whether because they must play catch-up to acquire relevant knowledge and skills or because they feel less confident in this regard, or both.

Other patterns are slightly less distinct, but still suggest the opportunity for law schools to serve as an equalizing force among students with regard to age and experience, race/ethnicity and their interest in particular substantive areas of law. By stressing the importance of NGS, business and financial expertise as basic components of legal education, law schools can communicate that learning the language of these quantitative-focused matters is similarly central to becoming a lawyer as is mastering the language

and basic tenets of contracts, torts and civil procedure. Broadening the focus to include these areas will strengthen the relevance of legal education, too, in light of the widespread use of NGS, business and financial information in describing and analyzing the problems of society.⁶⁸

It remains to determine how best to address the lapses in legal education identified here. In the past, law schools often have implemented curricular changes without also developing strategies to assess their results. Typically there has been no review to determine whether changes in emphasis, coursework or characteristics of faculty contributed to the results the schools intended. Perhaps when law schools were flush with resources such an analysis was considered unnecessary. Today, however, the severe budget constraints in legal education and higher education generally means that it makes little sense to devise solutions that cannot be monitored for progress. And indeed, the topic of NGS information and business and financial concepts themselves suggest a more rigorous and measurable approach.⁶⁹

The results described in Section III confirm the criticism of law schools as not focused on helping students learn to understand the factual contexts that will surround much of their work. More importantly, however, they point to opportunities to improve, to target gaps and build on existing capabilities while also broadening the relevancy of legal education. But this study provides only one approach to learning about law students' experiences; law schools would do well to consider multiple methods of investi-

⁶⁸ Certain findings of the research described in this article require additional investigation. For example, a relationship between law school curricular differences and learning regarding NGS, business and financial matters was suggested in the data and requires more research to understand. Additionally, students who were more satisfied with their overall educational experience in law school were both more engaged generally in law school and reported greater use of NGS compared to students who were less satisfied. Students who rated their entire educational experience as "excellent" or "good" reported statistically greater use of NGS than those who rated their experience as "fair" or "poor" ($p < .001$ for all four NSG items; Cohen's d effect sizes ranged from $d = .34$ for "explained in writing the meaning of NGS" to $d = .45$ for "evaluated others' conclusions based on NGS"). Positive correlations were found between students' use of NGS information and LSSSE's aggregate measures of student-faculty interaction, and learning to think like a lawyer. Again, more research is necessary to understand these correlations and their implications.

⁶⁹ See generally Patrick Johnson, *What Metrics Should You Be Tracking?*, THE METROPOLITAN CORPORATE COUNSEL, (June 26, 2014), www.metrocorpcounsel.com/articles/29293/what-metrics-should-you-be-tracking ("It's difficult to improve what you don't measure. Metrics to optimize operational performance have traditionally been commonplace in most parts of a business, but less so in legal departments – although that trend has been changing as legal departments seek greater efficiency and budgetary restraints.").

gating student learning in order to explore the influence of particular curricular and pedagogical approaches in addition to the characteristics and skills that students bring into law school.⁷⁰

CONCLUSION

The influence and trendiness of assessment and measurable outcomes raises risks and opportunities generally, including for legal education. Measurement may well be an inappropriate goal with regard to certain elements of legal education. But recognizing and embracing its relevance in particular circumstances is a way for law schools to engage with important movements in higher education, the hiring market for law graduates and more generally in society.

The call for law schools to teach students about business and financial matters and to work with quantitative information is not new. This article offers the insight of data on what students perceive they are learning in law school. These data indicate significant opportunities to expand the scope and depth of what law schools teach by increasing the emphasis on the contexts in which law graduates will work. Inevitably, these contexts will involve the issues raised here.

In this article, we have urged law schools to take a more quantitative, measurable approach to their own work as well as to incorporate that in their teaching. By doing both, they will support the relevance of their graduates as well as themselves, and offer more transparency to the issue of value for both students and the institution of legal education.

⁷⁰ The American Bar Association Section of Legal Education and Admissions to the Bar recently amended its Standards and Rules of Procedure for Approval of Law Schools to include requirements for assessment. Especially relevant to the issues discussed here is new Standard 315, "Evaluation of Program of Legal Education, Learning Outcomes, and Assessment Methods," available at www.americanbar.org/content/dam/aba/publications/misc/legal_education/Standards/2014_2015_aba_standards_chapter3.authcheckdam.pdf. See also *Association of American Law Schools Workshop on Measuring Learning Gains: Institutional Effectiveness for the New Era*, memberaccess.aals.org/eweb/DynamicPage.aspx?webcode=TrkDetails&trk_key=081c2aad-25dd-46c0-a20e-adaa2f63d8e9 (conference for law school faculty and administrators about assessment and learning outcomes standards).

APPENDIX

EXPERIMENTAL QUESTIONS

1. During the current school year, about how often have you done each of the following as part of a course, in class discussion, or for a course-related assignment or project? (response options: very often, often, sometimes, never)
 - a. Discussed the meaning of numerical, graphical or statistical information
 - b. Evaluated conclusions others have reached that were based on numerical, graphical or statistical information
 - c. Explained in writing the meaning of numerical, graphical or statistical information
 - d. Used numerical, graphical or statistical information to help analyze an issue (such as damages)
2. In your opinion, how much has your law school helped you acquire or develop financial or business skills? (response options: very much, some, very little, not at all)
3. When did you first learn to read and understand a financial statement (balance sheet and/or income statement)? Response options:
 - Before coming to law school/through activities unrelated to law school
 - In a law school class or other law-school sponsored activities
 - Not applicable/Never)
4. During the current school year, about how often have you read a national business or financial journal, newspaper or web-based publication (such as the Wall Street Journal, Forbes or Yahoo Finance)? (response options: very often, often, sometimes, never)
5. During the current school year, about how much has your coursework involved learning to understand the following? (response options: very much, some, very little, not at all)
 - a. Numerical, graphical or statistical information
 - b. Business concepts
 - c. Financial concepts

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PUBLIC OPINION AND THE SECOND AMENDMENT

Nelson Lund[†]

Eds. Note: A blog post by Professor Bryan Caplan¹ brought our attention to an interesting polling result from Gallup.² Since 1959, Gallup has asked a question, in one of two forms, regarding a law banning handguns for everyone except police or authorized persons. For the first decade of the survey, the yes responses outweighed the nos (starting at a gap of 20 percentage points and decreasing from there). But since 1967, those responding no, there should not be a ban on handguns, have outweighed – by a notable 20 percent – those that respond yes, there should. We thought the intersection of public polling and Constitutional law was an interesting area to explore. We acknowledge that polling is a “light” metric, but it plays a significant role in shaping policy and legal outcomes. Professor Nelson Lund was kind enough to provide his thoughts, which we publish below.

The striking change in public polling results on the issue of handgun bans during recent decades undoubtedly reflects a significant cultural phenomenon. One can think of many possible contributing factors to the declining support for handgun bans, but it is extremely difficult to determine which of them actually contributed to the phenomenon or to determine how big each of their contributions has been.

Public polling has many notorious limitations. For example, it is well known that slight changes in the wording of a question can lead to dramatically different results. For that reason, the results can be extremely misleading. In this case, for example, the term “authorized person” might mean something very different to different respondents, and it is quite possible that a large fraction interpreted the term to mean something dif-

[†] Nelson Lund is University Professor, George Mason University School of Law. © Nelson Lund 2015.

¹ econlog.econlib.org/archives/2013/11/gun_grabbing_a.html#.

² www.gallup.com/poll/1645/guns.aspx.

ferent from what the pollster had in mind. In addition, many respondents may have interpreted the term in one way during one time period and in a different way during other time periods.

Polling of this type is also unable to measure the intensity of the respondents' opinions or the stability of their convictions. If gun control and/or gun crime has recently been much in the news, many respondents might express different opinions than they would at other times. Similarly, some respondents will undoubtedly be more resistant than others to having their opinions changed by hearing evidence or arguments to which they have not been previously exposed.

Accordingly, I do not believe that we can learn a lot directly from polling data like these. The magnitude of the change measured by these data, however, strongly suggests some kind of important cultural shift, and that shift is confirmed by other data, especially dramatic legal changes that have occurred during this period.

I suspect that the two most important events were the adoption of a liberalized concealed carry statute in Florida in 1987 and the adoption of a major federal gun control statute in 1994.

During the first half of the period covered by the Gallup poll, almost all states with large urbanized population centers effectively prohibited most law-abiding citizens from carrying handguns in public. In 1987, Florida changed its statutes to make it very easy to get a permit for concealed carry. This caused a major public furor, consisting primarily of dire predictions that the streets would soon be running with blood. The predictions proved false, for permit holders almost never used their weapons to commit a crime. As the years went by, many other states changed their laws to resemble Florida's, and nobody has been able to show that this liberalization had any measurable bad effects. Today, only eight states make it almost impossible for an ordinary citizen to have the legal right to carry a concealed handgun.

It is hard to know whether changing public opinion was the main contributor to these legal changes, or whether the results of the legal changes contributed significantly to changes in public opinion. But we can be pretty sure that if the liberalization of concealed carry laws had produced disastrous effects, we would have different laws and different public attitudes today.

The 1994 federal gun control law reflects the other side of the coin. Public discussions of gun control typically flare up after heavy news coverage of gun crimes. The first major federal law, in 1934, was enacted in the

wake of the gangster wars during Prohibition. The next major federal law, in 1968, came shortly after the assassinations of President Kennedy, Robert Kennedy and Martin Luther King, and the urban riots of that period. By the late 1980s, when states began liberalizing their concealed carry laws, gun control had become a more partisan issue than it had once been. A number of well publicized crimes took place, such as the Stockton schoolyard shooting in 1989, which predictably triggered loud calls for a new federal law. Nothing happened, however, until 1994 when the Democrats controlled both houses of Congress and the presidency. After enacting a new statute, the Democrats suffered devastating losses in the mid-term elections that year, and gun control was a major factor in their defeats. Neither House of Congress has taken any significant actions since that time. Even the nominal support for such measures by Al Gore in 2000 and John Kerry in 2004 appears to have hurt them, and it may have been a decisive factor in one or both of their defeats at the ballot box.

After the horrible massacre at Sandy Hook Elementary School in 2012, a few states passed relatively minor new restrictions on firearms, but others responded by *liberalizing* their gun laws. At the federal level President Obama has occasionally offered vague endorsements of more gun control, but he has not dared to impose any significant new restrictions through executive action. Nor has he pushed Congress to enact new legislation.

I regard these political results as more reliable indicators of a cultural shift than polling results. But they point in the same direction. The cultural shift may also help to explain the U.S. Supreme Court's sudden discovery of the Second Amendment in 2008, when it invalidated Washington D.C.'s handgun ban. The Second Amendment had been in the Constitution since 1791, but this was the first time the federal courts had used it to invalidate any gun control measure. Future cases may well confirm a right to carry handguns in public, especially now that so many states have shown that there is little or no danger in doing so. If that happens, it will become ever more unlikely that we will observe public attitudes shifting back toward what they seem to have been at the beginning of the period covered by the polling data. And it will certainly make the law more resistant to advocacy in favor of more gun control.

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CODE WORDS

Tom Cummins[†]

When we study law we are studying text, to one extent or another.¹ The graph on the cover of this issue of the *Journal of Legal Metrics* illustrates one approach to that study. It charts the extent to which two bodies of law – federal statutory and regulatory law – have increased over time. It does so by counting the pages in the *United States Code* and *Code of Federal Regulations* from first through the most recent editions.²

The general idea is not new: trace the growth of federal law over time.³ Never before, however, has a side-by-side measurement of federal statutory and regulatory text been compiled from first through current edition. This short essay provides a little background on those two federal codes, a note on the method used to compile the data, and a few observations, as well as the data itself in an appendix.

[†] Tom Cummins is a senior editor of the *Journal of Legal Metrics*.

¹ Cf. Antonin Scalia and Bryan Garner, *READING LAW: THE INTERPRETATION OF LEGAL TEXTS* xxvii (2012) (“Both your authors are textualists We hope to persuade our readers that this interpretive method is the soundest, most principled one that exists. But even those who are unpersuaded will remain, to a large degree, textualists themselves – whether or not they accept the title. While they may use legislative history, purposivism, or consequentialism at the margins, they will always begin with the text. Most will often end there.”); Jonathan R. Siegel, *Textualism and Contextualism in Administrative Law*, 78 B.U. L. REV. 1023, 1057 (1998) (“In a significant sense, we are all textualists now.”); Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 457 *passim* (1897).

² More precisely, it does so from the first editions through the most recent editions for which apples-to-apples comparisons are possible. Because the most recent full edition of the United States Code is the 2012 edition, this essay’s data and comparison runs through at that year, but no further. In passing, however, it bears noting that the 2013 edition of the *Code of Federal Regulations* had 175,496 pages (a 0.54% increase over the 2012 edition); the 2014 edition had 175,268 pages (a 0.13% decrease over the 2013 edition); and the 2015 edition has not yet been completed. Office of Federal Register, *Federal Register & CFR Publication Statistics – Aggregated Charts* (May 2015), available at <https://www.federalregister.gov/uploads/2015/05/OFR-STATISTICS-CHARTS-ALL1-1-1-2014.pdf> (last visited July 7, 2015).

³ See, e.g., Robert C. Ellickson, *Taming Leviathan: Will the Centralizing Tide of the Twentieth Century Continue into the Twenty-First?*, 74 S. CAL. L. REV. 101, 105 (2000).

I. A LITTLE BACKGROUND

A. *United States Code*

The *United States Code* is a collection of “the laws of the United States, general and permanent in their nature.”⁴ That is, the code is a consolidation of federal statutes, organized based on broad subject matter into 54 titles.⁵ The titles, in turn, are subdivided into smaller units including subtitles, chapters, subchapters, parts, subparts, sections, subsections, paragraphs, subparagraphs, clauses, subclauses, and items, although not necessarily in that order.⁶

Twenty-seven titles are “positive law,” meaning the titles’ contents are the law itself.⁷ Surprisingly, the remaining titles are not. Their contents are merely rebuttable evidence of what the law is.⁸ The law itself with respect to these titles is to be found in the volumes of the *United States Statutes at Large*, which is the permanent collection of all laws and resolutions enacted during each session of Congress, organized in chronological order.⁹

Similarly startling is the relative youth of the *United States Code*. Although the Constitution was ratified in 1788 and the first Congress convened and began passing bills the following year, the first publication of the *United States Code* was not until 1926. The graph adorning the cover of this issue of the *Journal of Legal Metrics*, as noted, illustrates the growth of that body of law from 1926 onwards. The story of what came before, however, is also one worth briefly retelling.¹⁰

⁴ 1 U.S.C. § 204(a) (2012). Temporary laws, such as appropriations acts, and special laws, such as those naming a highway, are not included in the Code.

⁵ One of these titles (Title 34) has been repealed; another (Title 53) has been reserved. See generally U.S. House of Representatives, Office of the Law Revision Counsel, *Detailed Guide to the United States Code Content and Features* (“House Guide”), uscode.house.gov/detailed_guide.xhtml (last visited July 9, 2015).

⁶ *House Guide*, *supra* note 5.

⁷ 1 U.S.C. § 204(a). Currently, the U.S. Code currently has 54 titles, of which the following 27 titles have been enacted into positive law: 1, 3, 4, 5, 9, 10, 11, 13, 14, 17, 18, 23, 28, 31, 32, 35, 36, 37, 38, 39, 40, 41, 44, 46, 49, 51, and 54. As noted, Title 34 has been repealed, Title 53 reserved. *House Guide*, *supra* note 5.

⁸ 1 U.S.C. § 204(a). See *Stephan v. United States*, 319 U.S. 423, 426 (1943); see generally Will Tress, *Lost Laws: What We Can't Find in the United States Code*, 40 GOLDEN GATE U.L. REV. 129, 131-33 (2010). Among the rebuttable evidence titles are some of the most significant: Title 12 (Banks and Banking), Title 26 (Internal Revenue Code), and Title 42 (Public Health and Welfare).

⁹ 1 U.S.C. § 112; see generally Government Printing Office, *About United States Statutes at Large*, www.gpo.gov/help/index.html#about_united_states_statutes_at_large.htm (last visited July 9, 2015).

¹⁰ For a far more complete retelling, see Ralph H. Dwan and Ernest R. Feidler, *The Federal Statutes*

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The first law regarding the publishing of the laws of the United States was enacted in 1789.¹¹ During the first session of the first Congress, a law was enacted providing that when an act of Congress became law, the secretary of state was to preserve the original, deliver a copy to each congressperson, send two copies to each state's executive authority, and publish the law in at least three newspapers printed in the United States "as soon as conveniently may be."¹²

The first law regarding the official collection of the laws of the United States was enacted six years later. It ordered the printing of a complete edition of all public laws and treaties of the United States up to that date (i.e., 1795), with an index.¹³ The law also ordered that after each session of Congress, the laws enacted during that session were to be printed and distributed among the states and territories.¹⁴

The United States Statutes at Large came into being four decades later when in March 1845 a law was enacted directing the attorney general to contract with Messrs. Little and Brown to publish a thousand copies of the compiled laws and treaties of the United States in chronological order.¹⁵ The gentlemen completed the first edition the following year, an eight-volume work.¹⁶

In doing so, they "discovered errors in the original text of many laws. They copied such text, however, verbatim, and where something had to be added in order that the text might make sense, it was enclosed in brackets."¹⁷ And so it went for the next two decades. Little and Brown continued to compile, but not consolidate, federal laws in chronological order.¹⁸

As the compilation continued to expand, previously enacted laws con-

— *Their History and Use*, 22 Minn. L. Rev. 1008 (1938). For a slightly more recent retelling, see Tress, *supra* note 8, at 133-36.

¹¹ 1 Stat. 68, ch. 14, *cited in* Dwan and Feidler, *supra* note 10, at 1008.

¹² *Id.*

¹³ 1 Stat. 443, ch. 50, *cited in* Tress, *supra* note 8, at 133.

¹⁴ *Id.*

¹⁵ 5 Stat. 798, *cited in* Dwan and Feidler, *supra* note 10, at 1010.

¹⁶ Dwan and Feidler, *supra* note 10, at 1010.

¹⁷ Dwan and Feidler, *supra* note 10, at 1011 n.17. Errors in statutory text, of course, are not confined to the nineteenth century. See, e.g., *King v. Burwell*, 576 U.S. ___ (2015) (slip op. at 14) ("The Affordable Care Act contains more than a few examples of inartful drafting. To cite just one, the Act creates three separate Section 1563s." (Parenthesis omitted)).

¹⁸ Dwan and Feidler, *supra* note 10, at 1011-12.

tinued to be repealed, superseded, or modified, with the result that it became “almost a practical impossibility to make a thorough search of the statutes on many subjects.”¹⁹ Eventually, in 1866 a commission was formed to consolidate the Statutes at Large into a unified whole.²⁰ But the commission quickly found their task would require rewriting numerous laws, reporting to Congress: “Where several statutes relating to the same subject modify each other, it has been impossible to state their united effect without writing a new statute.”²¹ Faced with the choice of writing a new statute or abandoning the task, the commission pressed on with its work.

The final product was presented to Congress in 1873, enacted in 1874, and published in 1875.²² In doing so, the federal government made a clean break with what had come before. When the Revised Statutes of 1873, as they came to be known, took effect, all preceding federal laws “embraced in any section were repealed.”²³ This was the first time (and to date the only time) that a complete revision of all general and permanent statutes was enacted.²⁴ They were not well received.²⁵

While still on the printing presses, 69 mistakes and omissions were identified.²⁶ Congress hastily passed a law correcting these errors, which was printed as a four-page appendix to the Revised Statutes of 1873.²⁷ But these weren’t the only errors and omissions in the text. Acts to fix other errors followed each successive year until 1878, when an amended and updated edition was published.²⁸

The updated edition of 1878, unlike its predecessor, was not enacted as positive law; rather, it was merely rebuttable evidence of what the law was. The reason was simple; “Congress, after its experience with the Revised Statutes of 1873, was reluctant to enact as law even a consolidation and revision of the statutes in a restricted field passed during only a four year period.”²⁹

¹⁹ Dwan and Feidler, *supra* note 10, at 1011-12.

²⁰ Tress, *supra* note 8, at 134.

²¹ William Johnston and Charles James, *Report of the Commissioners Appointed Under Act of June 27, 1866*, S. Misc. Doc. 101 (1868), *quoted in* Tress, *supra* note 8, at 134.

²² Tress, *supra* note 8, at 134.

²³ 1 Rev. Stat. 1091, § 559 (1873), *quoted in* Tress, *supra* note 8, at 135.

²⁴ Dwan and Feidler, *supra* note 10, at 1012.

²⁵ Tress, *supra* note 8, at 135.

²⁶ Dwan and Feidler, *supra* note 10, at 1014.

²⁷ Dwan and Feidler, *supra* note 10, at 1014; Tress, *supra* note 8, at 135.

²⁸ Tress, *supra* note 8, at 135 and nn.35-36 (collecting laws).

²⁹ Dwan and Feidler, *supra* note 10, at 1015.

Four decades passed before serious work on consolidating the laws of the United States resumed. That work began in 1919, when the chairman of the House of Representatives' law revision committee, Colonel Little, undertook the task.³⁰ The Senate's law revision committee was overwhelmed with the results, however, identifying 600 errors.³¹ The two chambers then came up with a new plan: outsource the work to West Publishing Company and Edward Thompson Company.³²

The two publishing companies promptly set to work consolidating an authoritative code, which drew upon Colonel Little's work, was checked by various expert committees and departments, and was also checked by an outside expert.³³ Nevertheless, "glaring errors were discovered when the bill to enact the codification was before the Senate and House of Representatives."³⁴ (Unsurprisingly, the process of enacting the *United States Code* as positive law would not begin until 1947).³⁵

The 1926 edition was replaced by a new edition in 1934, with successive full editions following at six-year intervals.³⁶ The handsome graph on the cover of this issue and appendix concluding this essay detail the growth of that body of law, as well as the growth of federal regulatory law, discussed next.

B. Code of Federal Regulations

The *Code of Federal Regulations* is "the codification of the general and permanent rules published in the *Federal Register* by the departments and agencies of the Federal Government."³⁷ The purpose is straightforward: "to present the official and complete text of agency regulations in one or-

³⁰ Dwan and Feidler, *supra* note 10, at 1018-19.

³¹ Dwan and Feidler, *supra* note 10, at 1019.

³² Dwan and Feidler, *supra* note 10, at 1020. At the time, both companies were producing private compilations. For an entertaining discussion of the competition between these two companies, see generally Ross E. Davies, *How West Law Was Made: The Company, Its Products, and Its Promotions*, 6 Charleston L. Rev. 231, 241 (2012).

³³ Dwan and Feidler, *supra* note 10, at 1020.

³⁴ Dwan and Feidler, *supra* note 10, at 1020.

³⁵ See Preface to United States Code (1926) ("This Code is the official restatement in convenient form of the general and permanent laws of the United States. No new law is enacted and no law repealed. It is *prima facie* the law. The presumption is rebuttable."), *quoted in* Tress, *supra* note 8, at 136.

³⁶ More fully, editions were published in 1940, 1946, 1952, 1958, 1964, 1970, 1976, 1982, 1988, 1994, 2000, 2006, and 2012.

³⁷ U.S. Gov't Printing Office, *About Code of Federal Regulations*, www.gpo.gov/help/index.html#about_code_of_federal_regulations.htm (last visited July 9, 2015).

ganized publication.”³⁸

Like the *United States Code*, the *Code of Federal Regulations* is organized into titles. Titles, in turn, are organized into volumes. The 2014 edition of the *Code of Federal Regulations*, for instance, has 212 volumes. Volumes are organized into chapters, parts, subparts, sections, and subsections.

The *Code of Federal Regulations* is also a relatively recent development in the nation’s history. Before 1936, the various federal agencies published their own regulations in their own publications, “be they gazettes, bulletins, rulings, digests, pamphlets, notices, codes, certificates, orders, and the like.”³⁹ These regulations were not compiled in a single source, much less codified in a unified whole.

And the New Deal came. With the rapid expansion of agency regulations in the early 1930s, the public and the government itself found it increasingly difficult to keep track of what regulations had been issued, altered, and revoked. This difficulty was vividly on display on December 10, 1934, when at oral argument before the Supreme Court the assistant attorney general had to acknowledge that the executive order that the administration was defending “had been inadvertently revoked.”⁴⁰

The next day, the president appointed a committee to study publishing a gazette containing executive branch orders.⁴¹ That same day, the *Harvard Law Review* published an article by Ervin Griswold entitled “Government in Ignorance of the Law – A Plea for Better Publication of Executive Legislation.”⁴² Griswold’s solution to this problem was “amazingly simple”: “an official publication . . . in which all rules and regulations shall be systematically and uniformly published.”⁴³

Within a year, Congress had passed the Federal Register Act, which Pres-

³⁸ National Archives, *About the CFR*, www.archives.gov/federal-register/cfr/about.html (last visited July 9, 2015).

³⁹ Rich McKinney, *A Research Guide to the Federal Register and the Code of Federal Regulations*, 46 *Law Library Lights* 10, 10 (2002), available at www.llsdc.org/assets/sourcebook/fall02.pdf (last visited July 9, 2015); see also Office of the Federal Register, *A Brief History Commemorating the 70th Anniversary of the Publication of the First Issue of the Federal Register* 2 (June 19, 2006) (“A Brief History of the Federal Register”), available at www.archives.gov/federal-register/the-federal-register/history.pdf (last visited July 9, 2015).

⁴⁰ McKinney, *supra* note 112, at 39.

⁴¹ McKinney, *supra* note 112, at 39.

⁴² 48 *HARV. L. REV.* 198 (1934).

⁴³ *Id.* at 205.

ident Roosevelt signed into law in July 1935.⁴⁴ The law directed agencies “to compile and file a complete set of all their documents that were in force as of January 26, 1936.”⁴⁵ The documents, moreover, would be available for immediate public inspection and “could not be valid against any person until filed at the [newly-created] *Federal Register*.”⁴⁶ The first edition of the *Federal Register* was published on March 14, 1936; it was 16 pages.⁴⁷

In 1938, the Federal Register Act was amended to require a “codification,” not simple compilation, of federal agency regulations.⁴⁸ The first edition of the *Code of Federal Regulations* was published the same year. It had 15 volumes and “included all finalized regulations that were published in the *Federal Register* from March 14, 1936 to June 1, 1938, as well as those agency regulations deposited with the Archivist [of the United States], and still in effect, that may have been published by the agencies before March 14, 1936.”⁴⁹

Supplements in separate volumes were published over the next several years (except for in 1942, because of the war effort), until the second full edition of the *Code of Federal Regulations* was published in 1949.⁵⁰ The growth from there, as noted, is illustrated on the cover of this issue and chronicled in the appendix following this essay.

II. A LITTLE DISCUSSION

A. The Method

The unit of measure used in this study is rough. On the subject, most are.⁵¹ About 15 years ago, for example, one writer took a tape measure to the *United States Code*.⁵² This study took a slightly more fine-grained

⁴⁴ Pub. L. 74-220 (July 26, 1935), cited in *A Brief History of the Federal Register*, *supra* note 39, at 2.

⁴⁵ *A Brief History of the Federal Register*, *supra* note 39, at 2. The full text of the Federal Register Act is available online at www.llsdc.org/assets/sourcebook/pl74-220-lh.pdf (last visited July 9, 2015).

⁴⁶ *A Brief History of the Federal Register*, *supra* note 39, at 2.

⁴⁷ *A Brief History of the Federal Register*, *supra* note 39, at 3.

⁴⁸ *A Brief History of the Federal Register*, *supra* note 39, at 4.

⁴⁹ McKinney, *supra* note 39, at 10.

⁵⁰ McKinney, *supra* note 39, at 10.

⁵¹ For a particularly fine treatment of this subject, however, see William P. Li et al., *Law is Code: A Software Engineering Approach to Analyzing the United States Code* (Sept. 21, 2014), available at papers.ssrn.com/sol3/papers.cfm?abstract_id=2511947 (last visited July 9, 2015).

⁵² Ellickson, *supra* note 3, at 105 (“In 1928, the unannotated version of the *United States Code* appeared in two tall volumes that totaled six inches in width. The 1988 version of the unannotated Code included twenty-nine volumes that spanned six feet, a twelve-fold increase.” (footnote omitted)).

approach, counting pages instead.⁵³

Specifically, to complete the study the pages in the *United States Code* were manually counted. Because the purpose was to measure the growth of the law, pages of statutory text were included in the count, but title pages, prefaces, tables of contents, tables of titles and chapters, tables of acts cited by popular names, and indexes were excluded. Partial pages of statutory text were included, blank pages excluded.

The process for gathering the *Code of Federal Regulations* data was far simpler; the data has been compiled by the Office of the Federal Register and is available on its website.⁵⁴ This data also has certain nuances, it should be noted, which are listed on that website and may be of some interest the punctilious scholar.⁵⁵

B. The Observations

The principal contribution of this essay is the raw data. Offered as a resource, the data is generally left to speak for itself. But two facets that may not be immediately obvious from the graph on the cover of this issue or the appendix following this essay also merit mention: (1) the specific rate of growth of the two bodies of law over time; and (2) the comparative size of the two bodies of law over time.

Regarding the first item, the overall percentage increase in page length of the *United States Code* from the 1926 edition to the 2012 edition was 2538%. The average rate of growth during this period was about 30% per year.

Additionally, although each successive edition of the *United States Code* increased in length over its predecessors, the specific rate of growth was not uniform. The largest increase, as one might expect, occurred during the New Deal era. The smallest occurred between 1994 and 2006. The following chart identifies the specific percentage increase for each edition over its predecessor (aside from the first edition, of course).

⁵³ Mitigating, albeit not entirely eliminating, the risk of typographical variations affecting the intra- and inter-code comparison is that the print versions of the *United States Code* and *Code of Federal Regulations* are both published by the U.S. Government Printing Office.

⁵⁴ Office of Federal Register, *Federal Register & CFR Publication Statistics – Aggregated Charts* (May 2015), available at <https://www.federalregister.gov/uploads/2015/05/OFR-STATISTICS-CHARTS-ALL1-1-1-2014.pdf> (last visited July 7, 2015).

⁵⁵ For example, total page counts for 1950 through 1969 include revisions and pocket part supplements. See *id.*

CODE WORDS

Increase in length of <i>United States Code</i> over prior edition	
edition	% increase
1926	n/a
1934	33%
1940	98%
1946	32%
1952	31%
1958	13%
1964	11%
1970	28%
1976	38%
1982	27%
1988	24%
1994	24%
2000	8%
2006	8%
2012	11%

Of passing interest, this growth has also not been uniformly distributed across the various titles of the *United States Code*. The most dramatic growth has been in Title 42, “Public Health and Welfare.” In the 1926 edition, the title spanned 11 pages.⁵⁶ In the 2012 edition, it spans 8,269 pages, an approximately 75,000% increase over this 86-year period. Assuming a steady rate of growth over the next 86-year period (a silly assumption, surely), around the turn of the next century, Title 42 will span about 6.2 million pages.

The *Code of Federal Regulations*, unlike the *United States Code*, has not increased in length with each successive edition. Rather, in the 63-year period from 1949, when the annual publication of new editions of the *Code of Federal Regulations* began, through 2012, the new editions were longer than their immediate predecessor 50 times, but shorter than their immediate predecessor 13 times. The overall increase in length during this period was 596%, for an average rate of growth of about 10% per year. The specific

⁵⁶ In 1926, this title was merely “Public Health.”

year-to-year percentage change is available on the Office of the Federal Register's website.⁵⁷

Turning to the second facet, the comparative size of the two texts over time, the relative ratio has not varied as much as a cursory visual inspection of the graph might suggest. The first time full editions of both the *United States Code* and *Code of Federal Regulations* were published in the same year was 1952, which then recurred each six years through 2012.

The first half of that period (i.e., 1952–1982) saw a fairly steady increase in the relative ratio, with the *Code of Federal Regulations* increasing from about 250% longer than the *United States Code* to about 475% longer. The second half, however, saw a fairly steady decline in that ratio, as identified in the chart below.

Percent by which the page length of the <i>Code of Federal Regulations</i> exceeds the <i>United States Code</i>	
edition	% longer
1952	248%
1958	234%
1964	322%
1970	436%
1976	420%
1982	477%
1988	430%
1994	396%
2000	375%
2006	362%
2012	364%

These two facets, of course, are not the only aspects of the data that might merit attention. Additionally, other variables – national population, gross domestic product, political party control, to name just three – might be added to enrich the analysis.

⁵⁷ Office of Federal Register, *Federal Register & CFR Publication Statistics – Aggregated Charts* (May 2015), available at <https://www.federalregister.gov/uploads/2015/05/OFR-STATISTICS-CHARTS-ALL1-1-1-2014.pdf> (last visited July 7, 2015).

CODE WORDS

The aim of this study, however, was simpler. Compile a side-by-side comparison of the text of federal statutory and regulatory law from the first edition through the current edition. The goal was not to answer the question “What does the data say?” but “Where is the data in the first place?”⁵⁸ For the subject of this study, the answer is on the journal’s cover and in the following appendix.

APPENDIX

Year	CFR Pages	USC Pages
1926		1,705
1927		
1928		
1929		
1930		
1931		
1932		
1933		
1934		2,275
1938	18,193	
1939		
1940		4,499
1941		
1942		
1943		
1944		
1945		
1946		5,918
1947		
1948		
1949	23,454	
1950	9,745*	

⁵⁸ See generally Journal of Legal Metrics, Introduction (Jan. 4, 2012), available at www.journaloflegalmetrics.org/2012/01/04/introduction/ (last visited July 10, 2015).

* Total Pages for 1950 through 1969 includes revisions and pocket part supplements.

Year	CFR Pages	USC Pages
1951	15,932	
1952	19,232	7,768
1953	18,464	
1954	16,502	
1955	17,989	
1956	21,651	
1957	19,589	
1958	20,643	8,807
1959	21,760	
1960	22,877	
1961	25,242	
1962	22,863	
1963	25,828	
1964	31,584	9,797
1965	34,783	
1966	43,118	
1967	50,375	
1968	53,513	
1969	52,863	
1970	54,834	12,582
1971	56,720	
1972	60,632*	
1973	64,872	
1974	67,860	
1975	71,224	
1976	72,740	17,326
1977	84,729	
1978	94,151	
1979	98,032	
1980	102,195	
1981	107,109	

* Total Pages for 1972 does not include the second revisions of titles 42 through 50, which were completed in October 1972.

CODE WORDS

Year	CFR Pages	USC Pages
1982	104,938	21,990
1983	105,654	
1984	111,830	
1985	105,935	
1986	109,509	
1987	114,337	
1988	117,480	27,308
1989	122,090	
1990	126,893	
1991	125,331	
1992	128,344	
1993	132,228	
1994	134,196	33,930
1995	138,186	
1996	132,112	
1997	131,060	
1998	135,127	
1999	134,932	
2000	138,049	36,786
2001	141,281	
2002	145,099	
2003	144,187	
2004	147,639	
2005	145,099	
2006	144,177	39,878
2007	147,639	
2008	151,973	
2009	154,107	
2010	156,010	
2011	168,159	
2012	163,333	44,905

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