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“A Court Would Likely (60-75%) Find . . .”

Defining Verbal Probability Expressions in Predictive Legal Analysis

Joe Fore*

I. Introduction

As advisors, lawyers continually predict the likelihood of legal outcomes for their clients.¹ Criminal defense attorneys must assess the chances of winning a not-guilty verdict to help clients decide whether to accept a plea deal.² Civil litigators must evaluate the prospects of surviving a motion to dismiss or summary judgment when advising a client to file, press, or settle a lawsuit.³ Tax counsel must predict whether a given position will pass muster with the IRS.⁴ Prediction is so central to

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¹ See RONALD E. MALLIN & JEFFREY M. SMITH, LEGAL MALPRACTICE § 19:12 (2009) (“The advisor should counsel the client about the likely state of the law, and the possible consequences of a particular action.”); Mark K. Osbeck, *Lawyer as Soothsayer: Exploring the Important Role of Outcome Prediction in the Practice of Law*, 123 PENN. ST. L. REV. 41, 43 (2018) (“One of the most important tasks lawyers undertake in furtherance of this advisory role is outcome prediction: that is, advising the client as to the likely outcome of various legal proceedings.”).

² Mark K. Osbeck, *Using Data Analytics Tools to Supplement Traditional Research and Analysis in Forecasting Case Outcomes*, 20 LEGAL WRITING 33, 33 (2015); Alan J. Gocha, Note, *A Call for Realism in the Justice System: Why Criminal Defense Attorneys Should Take Race into Account When Advising Clients*, 28 GEO. J. LEGAL ETHICS 547, 559 (2015).

³ See Jane Goodman-Delahunty et al., *Insightful or Wishful: Lawyers' Ability to Predict Case Outcomes*, 16 PSYCHOL. PUB. POL' & LAW 133, 133 (2010) (noting that “judgments and meta-judgments of future goals are an important aspect of a wide range of litigation-related decisions”); Osbeck, *supra* note 2, at 33 (“Predictive analysis is no less important in the civil arena. To properly evaluate settlement prospects, a lawyer must be able to assess the rough odds of winning at trial, and the potential exposure should the case proceed to trial.”); see generally Osbeck, *supra* note 1, at 46–51 (discussing the importance of outcome prediction to selecting cases and to accepting plea agreements or settlements).

⁴ See Osbeck, *supra* note 1, at 44, 51–52; Sarah B. Lawskey, *Modeling Uncertainty in Tax Law*, 65 STAN. L. REV. 241, 274 (2013).

lawyering that teaching objective, predictive analysis—conducting research to predict how the courts of a given jurisdiction would rule on a legal issue⁵—takes up a considerable part of almost all first-year legal writing courses.⁶

Because clients generally lack the lawyer’s specialized training and knowledge, “[c]lients’ choices and outcomes . . . depend on the abilities of their counsel to make reasonably accurate forecasts concerning [legal] outcomes.”⁷ Accurately assessing the probability of various outcomes is crucial for lawyers, clients, and the legal system, as a whole. If a lawyer misjudges the client’s chances of winning in litigation, for example, the client might press a losing case or reject a settlement proposal—wasting the client’s own time and resources, as well as the opposing party’s and the entire judiciary’s.⁸

Making predictions carries not only practical consequences for clients and attorneys—but also ethical ones. Both the ABA Model Rules of Professional Conduct and the Restatement of the Law Governing Lawyers require lawyers to “explain a matter to the extent reasonably necessary to permit the client to make informed decisions regarding the representation.”⁹ And a comment to Model Rule 1.4 states that, at least in the litigation context, “a lawyer should explain the general strategy *and prospects of success* . . .”¹⁰ Lawyers need not be clairvoyant; they’re not liable for well-reasoned predictions that turn out to be wrong.¹¹ But lawyers *do* have an obligation to explain their professional judgments in ways that allow clients to understand the likelihood of various outcomes.¹²

⁵ See RESTATEMENT (THIRD) OF THE LAW GOVERNING LAWYERS § 95 cmt. c (2000) (“Unless effectively stated or agreed otherwise, a legal opinion or similar evaluation constitutes . . . the lawyer’s professional opinion as to how any legal question addressed in the opinion would be decided by the courts in the applicable jurisdiction on the date of the evaluation.”).

⁶ Ted Becker, *What We Still Don’t Know about What Persuades Judges — And Some Ways We Might Find Out*, 22 LEG. WRITING 41, 47 (2018) (recognizing that “the first semester of many an LRW course is devoted to how lawyers communicate [legal] predictions to supervisors and clients”); see also ALWD/LWI ANNUAL LEGAL WRITING SURVEY REPORT OF THE 2016–2017 SURVEY 21, <https://www.lwionline.org/sites/default/files/Report-of-the-2016-2017-Survey.pdf> (noting that 96.7% of responding programs have a required legal writing course “focusing principally on objective (including predictive) legal analysis and writing”).

⁷ Goodman-Delahunty et al., *supra* note 3, at 134.

⁸ See Osbeck, *supra* note 1, at 50–51 (describing the impact of accurate predictions to case resolution and concluding that “the ability to make reasonably accurate predictions regarding litigation outcomes is key to the efficiency of our litigation system as a whole”); Goodman-Delahunty, *supra* note 3, at 134 (“The consequences of judgmental errors by lawyers can be costly for lawyers and their clients, as well as an unnecessary burden on an already overloaded justice system.”).

⁹ MODEL R. PROF’L CONDUCT 1.4(b) (AM. BAR ASS’N 2018); RESTATEMENT (THIRD) OF THE LAW GOVERNING LAWYERS § 20(3) (2000).

¹⁰ MODEL R. PROF’L CONDUCT 1.4(b) cmt. 5 (AM. BAR ASS’N 2018) (emphasis added).

¹¹ See MALLIN & SMITH, *supra* note 1, § 19:1 (“[T]he rule that an attorney is not liable for an error of judgment on an unsettled proposition of law is universally recognized.”).

¹² See *infra* notes 65–68 and accompanying text.

Like other professionals, lawyers often render predictions in the face of considerable uncertainty.¹³ Limited or vague authority or a changing legal landscape can create uncertainty.¹⁴ Or even when precedent exists, unless that precedent is perfectly on-point, there remains the tough task of determining how established legal rules would apply to the client's factual situation.¹⁵

The human element adds another layer of uncertainty. A lawyer's prediction about how a court would rule assumes the court (a) has complete knowledge of all relevant facts and law and (b) applies that law consistently with how previous judges have applied the law in similar situations—which may not always be the case.¹⁶ Trying to account for differences between individual judges or for the possibility of a judge just plain getting it wrong—hopefully, a rare occurrence—further complicates the task of giving clients accurate predictions.¹⁷ And lawyers themselves have intrinsic traits that make it difficult to accurately predict legal outcomes.¹⁸ For example, studies suggest that lawyers, like other professionals, suffer from systematic "optimism bias"—adopting "too favorable a view of the merits of the cases that they argue," and, therefore, overestimating the client's likelihood of success.¹⁹

¹³ See RESTATEMENT (THIRD) OF THE LAW GOVERNING LAWYERS § 94 cmt. c (2000) ("Lawyers are occupationally engaged in advising clients about activities on which law has an often uncertain bearing."); MALLEN & SMITH, *supra* note 1, § 19:1 ("The professional is distinguished from other skilled and knowledgeable individuals because undertakings usually require the exercise of judgment to resolve issues that are uncertain and subject to disagreement even among the most learned."); Andrew J. Turner, *Helping Students Grow Professionally and Overcome Fear: The Benefits of Teaching Unqualified Brief Answers*, 25 PERSPS. 3, 3–4 (2016) (noting that lawyers making predictions face "a bundle of uncertainties including legal uncertainty, outcome uncertainty, factual uncertainty, analytical uncertainty, and emotional uncertainty").

¹⁴ See MALLEN & SMITH, *supra* note 1, § 19:8; Osbeck, *supra* note 1, at 66–68.

¹⁵ See Osbeck, *supra* note 2, at 34 ("A legal rule that seems relatively clear within the factual context of a particular precedent may not readily lend itself to application in a different factual context.").

¹⁶ Osbeck, *supra* note 1, at 71–72 (describing the influence of various "non-doctrinal considerations" on case outcomes and noting that "[j]udges and juries are not machines, and they cannot be counted on to apply legal rules to the facts in a purely mechanical manner"); Jasper L. Cummings, Jr., *The Range of Legal Tax Opinions, with Emphasis on the "Should" Opinion*, 98 TAX NOTES TODAY 1125, 1125 (Feb. 17, 2003) ("[O]pinions are understood to assume that the arbiter has all of the relevant facts, and will properly apply the law to the facts; that is, an opinion is based on a hypothetical perfect judge and is not a warranty that a judge won't go off . . . and make an unsupported decision.").

¹⁷ See Kevin Bennardo, *Abandoning Predictions*, 16 LEGAL COMM. & RHETORIC: JALWD 39 (2019) (suggesting that "extralegal factors"—including a judge's prior beliefs and biases, time constraints, and public opinion—can exert significant influence on judicial outcomes); Osbeck, *supra* note 2, at 35 (explaining that lawyers trying to predict case outcomes "typically [have] little meaningful information to rely on in assessing how differences between judges might affect the possible outcome").

¹⁸ Osbeck, *supra* note 1, at 71 (discussing "cognitive biases [that] may skew a lawyer's predictions").

¹⁹ Zev J. Eigen & Yair Listokin, *Do Lawyers Really Believe Their Own Hype, and Should They? A Natural Experiment*, 41 J. LEGAL STUD. 239, 239–40 (2012); see also Becker, *supra* note 6, at 47–48 ("Similar studies about lawyers—by non-legal writing scholars—reach similar results: experienced attorneys overpredict the chances of a successful result in ways that mirror the position of their clients.").

Given these sources of uncertainty, many legal questions can't be answered with a definitive "yes" or "no."²⁰ So lawyers often employ qualitative probability expressions—words like "unlikely," "likely," "probably," or "almost certainly"—to give the reader an approximate sense of the chances of achieving a desired legal outcome.²¹ Legal writing guides routinely encourage and model the use of such modifiers.²²

1.1: Most common probability expressions in legal writing guides²³

Word / Phrase	Guides Mentioning Expression or Using in Sample Documents
Probably/probably [yes/no/not]	13
Likely [yes/no]	7
Should	3
Most likely [not]	3
Probable	3
Unlikely	3
Almost certainly	2
Maybe	2
Possible/possibly	2
Will [not]	2
Cannot	1
Reasonably	1
Plausibly	1
Certain	1

²⁰ See TERESA J. REID RAMBO & LEANNE J. PFLAUM, *LEGAL WRITING BY DESIGN* 177 (2d ed. 2013) (“In our combined legal experience (over fifty years including law school, clerking, practicing law, and teaching!), we know that *few* legal questions have easy ‘yes’ or ‘no’ answers.”).

²¹ See Osbeck, *supra* note 1, at 56 (noting that lawyers “tend to qualify their determinations broadly (e.g., it is ‘highly likely’ or just ‘more likely than not’ that the jury will find the conduct to be outrageous)”; Turner, *supra* note 13, at 3 (“Qualified brief answers are the standard among students, professors, and practitioners alike and for good reason. Legal questions are typically complex and the law often uncertain. Qualifiers allow writers to express and quantify that uncertainty, adding the necessary nuance that a simple ‘yes’ or ‘no’ cannot.”); CHRISTINE COUGHLIN ET AL., *A LAWYER WRITES: A PRACTICAL GUIDE TO LEGAL ANALYSIS* 242 (3d ed. 2018) (suggesting language that lawyers can use to convey degrees of certainty, including “likely,” “probably not,” and “cannot”).

²² See, e.g., ALEXA Z. CHEW & KATIE ROSE GUEST PRYAL, *THE COMPLETE LEGAL WRITER* 393 (2016) (“There is nothing stylistically wrong with using tempering qualifiers, and sometimes you should use them to ensure the accuracy of your claims.”); HEIDI K. BROWN, *THE MINDFUL LEGAL WRITER: MASTERING PREDICTIVE WRITING* 166 (2015) (suggesting legal writers phrase conclusions using phrases like “A court likely/unlikely will find . . .” and “A court probably will find . . .”); BRYAN A. GARNER, *THE REDBOOK: A MANUAL ON LEGAL STYLE* §16.3(d), at 400 (4th ed. 2018) (noting, in the context of a predictive memorandum, that “[s]ometimes the brief answer must be ‘probably’ or ‘it depends’ rather than ‘yes’ or ‘no’”); RAMBO & PFLAUM, *supra* note 20, at 178 (encouraging students to “employ the covering our . . . ‘options’ theory and err on the side of ‘hedging’ with a ‘probably’ [a]nswer”); COUGHLIN, *supra* note 21, at 242 (listing suggested phrases to use when providing estimated likelihood of a given outcome). *But see* Turner, *supra* note 13 (advocating for legal writing professors to encourage students to give unqualified brief answers in memo assignments—that is, without probability expressions).

²³ This list was assembled from the following sources: CHEW & PRYAL, *supra* note 22, at 112, 122, 147, 393, 394; BROWN, *supra* note 22, at 166, 182; HELENE SHAPO ET AL., *WRITING AND ANALYSIS IN THE LAW* 162, 164, 290, 488 (7th ed. 2018); AMY VORENBERG, *PREPARING FOR PRACTICE: LEGAL ANALYSIS AND WRITING IN LAW SCHOOL’S FIRST YEAR* 79, 163

Some legal writing guides rightly caution against over-hedging when rendering opinions, noting that equivocation does a client or supervisor no favors.²⁴ But there's a more fundamental problem with using qualitative probability expressions in legal writing: they don't have generally accepted meanings.²⁵ Do "likely" and "more likely than not" mean the same thing? Does "unlikely" mean a 49% chance of success? 33%? 20%? This ambiguity poses a serious challenge to lawyers when advising their clients. After all, *making* legal predictions is hard enough;²⁶ *communicating* those predictions in a way that's prone to misinterpretation only compounds the problem.²⁷

The uses and meanings of verbal probabilities have received considerable scholarly attention in fields like medicine, national intelligence, and climate science.²⁸ But "[t]here has been only limited social science inquiry on translating *legal*, verbal probability statements into numeric estimates."²⁹ To be sure, legal commentators have thoroughly examined related issues of how legal actors interpret qualitative legal standards—for example, the way that judges, jurors, and attorneys interpret qualitative burdens of proof like "probable cause," "clear and convincing evidence," or "beyond a reasonable doubt."³⁰ Similarly, there has also been considerable

(2014); LINDA EDWARDS, *LEGAL WRITING AND ANALYSIS* 139, 140, 141, 313 (4th ed. 2015); CATHY GLASER ET AL., *THE LAWYER'S CRAFT: AN INTRODUCTION TO LEGAL ANALYSIS, WRITING, RESEARCH, AND ADVOCACY* 166, 401, 409, 417 (2002); JILL BARTON & RACHEL H. SMITH, *THE HANDBOOK FOR THE NEW LEGAL WRITER* 38 (2014); TERRILL POLLMAN ET AL., *EXAMPLES AND EXPLANATIONS: LEGAL WRITING* 24, 178, 179, 181, 182, 187 (3d ed. 2018); RAMBO & PFLAUM, *supra* note 20, at 177–79; VEDA R. CHARROW ET AL., *CLEAR AND EFFECTIVE LEGAL WRITING* 248, 265 (4th ed. 2007); TRACY TURNER, *LEGAL WRITING FROM THE GROUND UP* 245, 351 (2015); COUGHLIN, *supra* note 2121, at 231, 241, 242, 373, 383, 397; GARNER, *supra* note 22, at 405, 410; BRYAN A. GARNER, *LEGAL WRITING IN PLAIN ENGLISH* 158, 177, 178, 222 (2001); MARY BETH BEAZLEY & MONTE SMITH, *LEGAL WRITING FOR LEGAL READERS* 181–82 (2d ed. 2019); RICHARD K. NEUMANN, JR. ET AL., *LEGAL WRITING* 125, 133, 136, 138, 364, 374 (3d ed. 2015).

24 See, e.g., CHEW & PRYAL, *supra* note 22, at 393–94 (warning that "overuse of tempering qualifiers can clog up your language and make your meaning difficult to parse"); BROWN, *supra* note 22, at 166 (discouraging the use of the phrase "[i]t is possible . . ." in the conclusion of a legal memorandum and describing the phrase as "wishy-washy"); COUGHLIN, *supra* note 21, at 181 ("[S]imply saying that a court could decide one way or a court could decide another way is not helpful to your colleague who has asked you to research a legal question.").

25 See Donald C. Langevoort & Robert K. Rasmussen, *Skewing the Results: The Role of Lawyers in Transmitting Legal Rules*, 5 S. CAL. INTERDISC. L.J. 375, 417 (1997) ("[T]here is not even a clearly defined common understanding within the profession about what the locutions mean (e.g., what degree of confidence is represented by the term 'highly unlikely').").

26 See *supra* notes 13–19 and accompanying text.

27 See Detlev F. Vagts, *Legal Opinions in Quantitative Terms: The Lawyer as Haruspex or Bookie?*, 34 BUS. LAW. 421, 422 (1979) ("The consequence of making [legal] predictions but . . . keeping them in strictly verbal form is that such statements tend not only to be even more imprecise than the uncertain character of the actions predicted requires but that they can be downright confusing and misleading.").

28 See *infra* section 3.2.

29 Richard Seltzer et al., *Legal Standards by the Numbers: Quantifying Burdens of Proof or a Search for Fool's Gold*, 100 JUDICATURE 56, 59 (2016) (emphasis added).

30 See, e.g., *id.*; Mandeep K. Dhimi et al., *Instructions on Reasonable Doubt: Defining the Standard of Proof and the Juror's Task*, 21 PSYCHOL. PUB. POL'Y & L. 169 (2015); C.M.A. McCauliff, *Burdens of Proof: Degrees of Belief, Quanta of Evidence, or Constitutional Guarantees?*, 35 VAND. L. REV. 1293 (1982).

scholarship on the ways that expert witnesses convey the significance of scientific evidence to fact-finders.³¹ And scholars have long discussed how clinicians can or should communicate likelihoods of future violent behavior in the context of mental health law and involuntary commitment proceedings.³² But the specific issue of the meanings of verbal probabilities in advising *clients* has received little systematic inquiry in legal scholarship³³ and even less in legal writing scholarship.³⁴

This article seeks to expand that inquiry. Drawing on previous social science research and perspectives from other professional fields, section 2 provides background on communicating probability estimates, including the use of both quantitative and qualitative approaches, as well as the use of specialized lexicons to standardize probability expressions. Section 3 examines several specific disciplines—both legal and non-legal—that have attempted to create their own probability lexicons to reduce ambiguity in communicating predictions and, then, constructs a proposed probability lexicon for general, predictive legal writing. Section 4 offers recommendations for how scholars and practitioners can continue to explore the topic of clearly and accurately conveying likelihood in legal analysis.

II. Communicating likelihood estimates

When giving guidance to decisionmakers, analysts must assess the chances of various events occurring, “which then need to be communicated to decision makers . . . in ways that can be understood and appreciated.”³⁵ In fields like law, finance, national intelligence, and

³¹ See, e.g., Kristy A. Martire et al., *The Expression and Interpretation of Uncertain Forensic Science Evidence: Verbal Equivalence, Evidence Strength, and the Weak Evidence Effect*, 37 L. & HUM. BEHAV. 197 (2013).

³² See, e.g., Jefferson C. Knighton et al., *How Likely Is “Likely to Reoffend” in Sex Offender Civil Commitment Trials?*, 38 L. & HUM. BEHAV. 293 (2014); John Monahan & Henry J. Steadman, *Violent Storms and Violent People: How Meteorology Can Inform Risk Communication in Mental Health Law*, 51 AM. PSYCHOLOGIST 931 (1996).

³³ As discussed below, there have been articles discussing the use of verbal probabilities in the specific areas of business and real estate closing opinions, auditor inquiry responses, and tax advising, see *infra* section 3.1, but almost none discussing the verbal probability phrases suggested most often in general legal writing. Indeed, the author is aware of only a few anecdotal mentions or guesses—made without empirical grounding or significant discussion—of the numerical meanings of the most common verbal probabilities referenced in legal writing guides. See, e.g., THOMAS B. MARVELL, APPELLATE COURTS AND LAWYERS: INFORMATION GATHERING IN THE ADVERSARY SYSTEM 238 (1978) (providing a table that defines words like “usual,” “unlikely,” “rare,” and “vast majority” in percentage terms as used throughout the book); Langevoort & Rasmussen, *supra* note 25, at 418 (proposing a hypothetical legal-advising situation where, “if ‘uncertain’ was a fifty percent chance, ‘likely’ a seventy percent chance and ‘highly likely’ a ninety percent chance, then a seventy-five percent assessment would be characterized as likely”); Vagts, *supra* note 27, at 422 (positing that “[p]robable” seems to convey a likelihood appreciably greater than 50:50; ‘reasonably certain’ on the other hand suggests odds in the range of 80:20 to 90:10 . . .”).

³⁴ Perhaps the most detailed exploration of the use—or non-use—of verbal probabilities in the legal writing literature is Andrew Turner’s 2016 *Perspectives* article, which urges legal writing professors to encourage students to *avoid* using such verbal probabilities and to give unqualified brief answers in assignments. Turner, *supra* note 13.

³⁵ Scott Ferson et al., *Natural Language of Uncertainty: Numeric Hedge Words*, 57 INT’L J. APPROXIMATE REASONING 19, 32 (2015).

politics—where predictions often can't be rendered with scientific precision—analysts must instead rely on providing decisionmakers with subjective probabilities.³⁶ These probabilities can either be conveyed qualitatively (for example, saying that something is “unlikely,” “likely” or “very likely” to occur) or quantitatively (as odds or percentages or ranges of percentages).³⁷

This section explores the advantages and disadvantages of each approach. Qualitative probabilities feel natural to use, but they are subject to very large interpersonal variation in interpretations, creating the possibility for serious misunderstandings between analysts and decisionmakers. Quantitative probabilities reduce ambiguity, but they, too, can be misunderstood by an audience, and many subjective fields, including law, have long resisted assigning numbers to predictions. Ultimately, given the unease that many professionals have about using numerical probabilities, the most promising approach for reducing ambiguity might be to use a hybrid approach: a standardized “probability lexicon” that defines verbal probabilities using specific numerical probabilities or probability ranges.

A. Qualitative/verbal probability expressions

Qualitative probability expressions—sometimes called “verbal probabilities,” “verbal probability phrases,” or “words of estimative probability”³⁸—are common in both everyday speech and professional settings as an “intuitive and natural” way of conveying likelihood.³⁹ But they suffer from a serious and inherent flaw: they are interpreted differently by individuals and groups in different contexts. Research reveals several key points about people’s understandings of verbal probabilities.

Different people interpret verbal probabilities differently.

Individuals tend to have clear and consistent ideas, for themselves, of what they mean when they use various probability phrases.⁴⁰ As Humpty Dumpty says in *Through the Looking Glass and What Alice Found There*, “When I use a word . . . it means just what I choose it to mean—neither

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³⁶ Jeffrey A. Friedman & Richard Zeckhauser, *Handling and Mishandling Estimative Probability: Likelihood, Confidence, and the Search for Bin Laden*, 30 J. INTELLIGENCE & NAT’L SEC. 77, 80 (2014).

³⁷ Tzur M. Karelitz & David V. Budescu, *You Say “Probable” and I Say “Likely”: Improving Interpersonal Communication with Verbal Probability Phrases*, 10 J. EXPERIMENTAL PSYCHOL. 25, 25 (2004); Emily H. Ho et al., *Improving the Communication of Uncertainty in Climate Science and Intelligence Analysis*, 1 BEHAV. SCI. & POLICY 53, 54 (2015).

³⁸ See generally Karelitz & Budescu, *supra* note 37; Sherman Kent, *Words of Estimative Probability*, 8 STUD. INTELLIGENCE 49, 56–57 (1964).

³⁹ Ho et al., *supra* note 37, at 54; Seltzer et al., *supra* note 29, at 59.

⁴⁰ Karelitz & Budescu, *supra* note 37, at 27 (noting that “most people perceive the meanings of verbal probabilities consistently and reliably”).

more nor less.”⁴¹ And because verbal probabilities have a clear meaning in people’s own minds, people “naively assume that others share their interpretation of the phrases they use to convey uncertainty. But research shows that interpretations of [verbal probabilities] vary greatly across individuals.”⁴² Indeed, there are even considerable differences *between* mean results of different studies.⁴³ A meta-analysis of previous studies of probability phrase interpretation showed that, over six different studies, the word “unlikely” had been interpreted, on average, as low as 14% or as high as 31%.⁴⁴ The word “possible” had a 28-percentage-point spread, with mean interpretations as low as 27% and as high as 55%.⁴⁵ Figure 2.1 summarizes the results of two reviews of the empirical literature.

2.1: Numerical estimates of verbal probabilities from reviews of empirical research

	Mean Numeric Probability / Range	
	Theil (2002) ⁴⁶	Mosteller & Youtz (1990) ⁴⁷
Very probable	79-87%	85%
Probable	64.5-74.66	69
Likely	63-77	69
Possible	27-55	37
Unlikely	14-31.42	16
Very unlikely	9-28.44	8
Rare[ly]	5-14	7

Even experts interpret probability words differently. “Numerous studies have found considerable interpersonal variability in interpreting probability phrases not only among lay people but among experts within their professional domains.”⁴⁸ For example, in one study that asked

41 LEWIS CARROLL, THROUGH THE LOOKING GLASS AND WHAT ALICE FOUND THERE 168 (rev. ed. 1897), *quoted in* DONALD W. GLAZER, SCOTT FITZGIBBON & STEVEN O. WEISE, GLAZER & FITZGIBBON ON LEGAL OPINIONS: DRAFTING, INTERPRETING AND SUPPORTING CLOSING OPINIONS IN BUSINESS TRANSACTIONS § 1.4 n.1 (3d ed. 2015).

42 Ho et al., *supra* note 37, at 54.

43 Michael Theil, *The Role of Translations of Verbal into Numerical Probability Expressions in Risk Management: A Meta-Analysis*, 5 J. RISK RESEARCH 177, 184 (2002).

44 *Id.* at 181.

45 *Id.*

46 *Id.*

47 Frederick Mosteller & Cleo Youtz, *Quantifying Probabilistic Expressions*, 5 STATISTICAL SCI. 2, 4 (1990). The figures listed in this column are weighted averages. There is some overlap in the data sources for these two surveys, as three out of the ten studies surveyed in the Theil meta-analysis were also included in the Mosteller & Youtz survey.

48 Karelitz & Budescu, *supra* note 37, at 27; *see also* Chad S. Dodson & David G. Doboelyi, *Misinterpreting Eyewitness Expressions of Confidence: The Featural Justification Effect*, 39 L. & HUM. BEHAV. 266, 278 (2015) (“[E]xpertise does not eliminate interpersonal variability in the interpretation of verbal expressions of certainty.”); Ruth Beyth-Marom, *How Probable is Probable? A Numerical Translation of Verbal Probability Expression*, 1 J. FORECASTING 257, 264 (1982).

financial analysts to assign numerical likelihoods to qualitative probability expressions, the phrase "fair chance" was given probabilities ranging from 18% to 66%, while the word "unlikely" was rated as low as 5% and as high as 45%.⁴⁹ In another study that asked Israeli expert forecasters to assign percentages to probability expressions, the Hebrew translation for "likely" was assigned percentages as low as 42% and as high as 81%.⁵⁰ Even seemingly clear phrases were interpreted very differently; "nearly certain" was rated as low as 76% by some participants, and "very low chance" was interpreted as high as 23%.⁵¹

Interpretations of verbal probabilities vary with context. Verbal probability expressions can be interpreted differently when used in different contexts.⁵² Indeed, some studies suggest that such words are subject to even "greater variability among individuals' interpretations of probability phrases *when phrases occur within a context* than when they occur in isolation."⁵³ The frequency of previous occurrences of the event (the "base rate"), the event's desirability, and the severity of the event's consequences can all affect interpretations of probability expressions.⁵⁴ For example, in one survey of jurors, *more than half* of respondents said that a hypothetical sexual offender with a stated probability of recidivism of just 1% would be "likely" to reoffend; the grave consequences of a repeat incident may have led jurors to find even an objectively low-probability event to be "likely."⁵⁵ These context effects can create issues when experts in a given field attempt to use probability expressions in a particular way, as meanings intended by these experts may not match the way that lay audiences will intuitively view them in that context.⁵⁶

49 Madjid Tavana et al., *An Applied Study Using the Analytic Hierarchy Process to Translate Common Verbal Phrases to Numerical Probabilities*, 10 J. BEHAV. DECISION MAKING 133, 138 (1997).

50 Beyth-Marom, *supra* note 48, at 261.

51 *Id.*; see also Bernie J. O'Brien, *Words or Numbers? The Evaluation of Probability Expressions in General Practice*, 39 J. ROYAL C. GEN. PRAC. 98, 99 (1989) (reporting physicians' estimates of various verbal probability expressions).

52 See Karelitz & Budescu, *supra* note 37, at 26 ("Context effects on the interpretation of probability terms are pervasive").

53 See Dodson & Dobolyi, *supra* note 48, at 267 (emphasis added).

54 See Karelitz & Budescu, *supra* note 37, at 26; see also Karl H. Teigen & Wibecke Brun, *Verbal Expressions of Uncertainty and Probability*, in THINKING: PSYCHOLOGICAL PERSPECTIVES ON REASONING, JUDGEMENT AND DECISION MAKING, 125, 127–28 (David Hardman & Laura Macchi eds., 2003) ("[I]nterpretations of probability terms are influenced by prior probabilities, or base rates; for instance, a "likely" snowfall in December will be assigned a higher probability than a "likely" snowfall in October. Interpretations are also affected by outcome severity.") (internal citation omitted); Adam J. L. Harris & Adam Corner, *Communicating Environmental Risks: Clarifying the Severity Effect in Interpretations of Verbal Probability Expressions*, 37 No. 6 J. EXPERIMENTAL PSYCHOL. 1571, 1576 (2011) (reporting results of a study "finding that increasing outcome severity led to higher interpretations of verbal probability expressions"); Beyth-Marom, *supra* note 48, at 266 (noting that previous research has concluded that "the desirability of an event influences its judged probability").

55 Knighton et al., *supra* note 32, at 300–01; cf. Jacquelyn Burkell, *What Are the Chances? Evaluating Risk and Benefit Information in Consumer Health Materials*, 92 J. MED. LIBR. ASS'N 200, 202 (2004) (discussing context effects on the interpretation of probability phrases and the potential confusion caused by using labels like "high risk" for serious medical issues that have objectively low probabilities).

56 Ho et al., *supra* note 37, at 54.

Certain words and phrases are more susceptible to interpretive variability than others. All verbal probabilities are vague, but some are more vague than others. For example, the previously described meta-analysis of studies found that “possible,” “unlikely,” “good chance,” and “very probable” showed more variability in how they were interpreted, whereas “likely,” “probable,” and “very unlikely” had comparatively more consensus in how they were interpreted.⁵⁷ Phrases that “indicate only that a probability is *not* zero, but say little about how probable it is”⁵⁸—such as “one must consider,” “one can’t rule it out entirely,” “not inevitable” or “uncertain”⁵⁹—are, unsurprisingly, prone to particularly wide variations in interpretation. There is also the problem of verbal probabilities that conflate “the strength of the probability and the desirability of the associated outcome”—such as a phrase like “good chance.”⁶⁰

Taken together, this research shows there is a high likelihood that decisionmakers receiving predictions in the form of verbal probabilities “may interpret the event probability very differently from the way the forecaster intended[] and may base an important decision on an erroneous interpretation.”⁶¹ Indeed, misunderstandings about the meaning of verbal probabilities have had disastrous, real-world consequences. For example, NASA’s process of translating qualitative probabilities of equipment failure into quantitative ones may have contributed to the explosion of the Space Shuttle Challenger.⁶² And different understandings of the phrase “fair chance of success” may have played a role in President Kennedy’s decision to launch the doomed Bay of Pigs invasion.⁶³

The anecdotal and empirical evidence discussed in this section has sobering consequences for lawyers. Imagine a scenario where a criminal defense lawyer tells a client that he has a “fair chance of success” at trial. The empirical research suggests a high likelihood that the client will understand his chances differently than the lawyer intended to commu-

⁵⁷ Theil, *supra* note 43, at 182.

⁵⁸ Beyth-Marom, *supra* note 48, at 268.

⁵⁹ *Id.*; Teigen & Brun, *supra* note 54, at 126–27; see also Mosteller & Youtz, *supra* note 47, at 10 (collecting results from previous empirical studies and suggesting certain verbal probabilities to avoid due to high interpretive variability, including “liable to happen,” “sometimes,” “not infrequent,” “not unreasonable,” “might happen,” and “possible”).

⁶⁰ Beyth-Marom, *supra* note 48, at 268 (“A 10 per cent chance to recover from an operation may be a ‘good’ one if the patient would otherwise die. However, the same 10 per cent chance is ‘bad’ if the operation is not essential and the person is healthy.”).

⁶¹ *Id.* at 266; see also Ho et al., *supra* note 37, at 55–56.

⁶² Elliot Marshall, *Feynman Issues His Own Shuttle Report, Attacking NASA’s Risk Estimates*, 232 SCI. 1596, 1596 (1986), cited in Karelitz & Budescu, *supra* note 37, at 25.

⁶³ Jeffrey A. Friedman et al., *The Value of Precision in Probability Assessment: Evidence from a Large-Scale Geopolitical Forecasting Tournament*, 62 INT’L STUD. Q. 410, 410 (2018), <https://doi.org/10.1093/isq/sqx078> (citing PETER H. WYDEN, BAY OF PIGS: THE UNTOLD STORY 88–90 (1979)); see also Karelitz & Budescu, *supra* note 37, at 25.

nicate.⁶⁴ This could have not only practical implications but, potentially, ethical ones as well. As noted above, ABA Model Rule of Professional Conduct 1.4(b) requires attorneys to explain matters relating to the representation—including, in litigation, the “prospects of success”—to their clients in a way that allows them to make informed decisions.⁶⁵ This raises an interesting question: can a client’s decision be truly “informed” if it is based on a misinterpretation of the “prospects of success” articulated by the lawyer? Lawyers generally have an obligation to ensure that clients accurately understand legal advice.⁶⁶ And courts have suggested that analogs to Model Rule 1.4(b) might require an attorney “to alter the way he or she communicates with a client to ensure that the client is adequately informed.”⁶⁷ Given the high variability in interpreting verbal probabilities, might that same principle discourage the use of vague verbal probabilities?

B. Quantitative/numerical probability expressions

If lawyers wanted to avoid the potentially grave consequences of using vague, qualitative probability expressions, they could use quantitative estimates—in percentages, odds, frequencies, or chances⁶⁸—since even highly subjective probability estimates can be expressed numerically.⁶⁹

64 See DAVID A. BINDER ET AL., *LAWYERS AS COUNSELORS: A CLIENT-CENTERED APPROACH* 409 (3d ed. 2012) (noting that “because clients tend to draw wildly different meanings” from vague verbal probabilities, “chances are excellent that clients will misunderstand the prediction you had in mind”).

65 See *supra* notes 9–10 and accompanying text. Another potentially relevant concept is the idea of “informed consent,” which appears in various parts of the ABA Model Rules. The Model Rules provide that “informed consent” can only be obtained “after the lawyer has communicated adequate information and explanation about the material risks of and reasonably available alternatives to the proposed course of conduct.” MODEL R. PROF’L CONDUCT 1.0(e) (AM. BAR ASS’N 2018); see generally Nancy J. Moore, *Why Is There No Clear Doctrine of Informed Consent for Lawyers?*, 47 U. TOLEDO L. REV. 133, 149–51 (2015) (discussing the definition and use of “informed consent” in the ABA Model Rules and its relationship with the duties owed under Rule 1.4). In the medical context, commentators have suggested that the ways doctors communicate probabilistic information might affect the extent to which a patient’s consent is truly “informed.” See Dennis J. Mazur & Jon F. Merz, *Patients’ Interpretations of Verbal Expressions of Probability: Implications for Securing Informed Consent to Medical Interventions*, 12 BEHAV. SCI. & L. 417 (1994).

66 See California State Bar, Formal Op. 1984-77, <http://www.calbar.ca.gov/Portals/0/documents/ethics/Opinions/1984-77.htm> (asserting, in the context of non-English-speaking clients, that “the attorney must take all reasonable steps to insure that the client comprehends the legal concepts involved and the advice given, irrespective of the mode of communication used, so that the client is in a position to make an informed decision,” and recognizing that “difficulty in communication can occur even between those who speak the same language, since a client may not immediately grasp the import of the words used by counsel”); see also MELISSA WERESH, *LEGAL WRITING: ETHICAL AND PROFESSIONAL CONSIDERATIONS* 64 (2d ed. 2009) (discussing Model Rule 1.4 and noting, in the context of delivering advice via client letters, that the lawyer should communicate “in a style and format that the client understands”).

67 Attorney Grievance Comm’n of Md. v. Framm, 144 A.3d 827, 845 (Md. 2016) (affirming finding that a lawyer violated Maryland’s version of Model Rule 1.4 by failing to put advice into writing when the lawyer knew that the client had “difficulty understanding and retaining information”).

68 See, e.g., Mariko Carey et al., *Exploring Health Literacy and Preferences for Risk Communication Among Medical Oncology Patients*, 13 PLOS ONE 1, 2 (2018).

69 Jeffrey A. Friedman et al., *Behavioral Consequences of Probabilistic Precision: Experimental Evidence from National Security Professionals*, 71 INT’L ORG. 803, 804 (2017) (“Analysts always have a coherent conceptual basis for quantifying probability estimates, no matter how subjective those estimates might be.”).

Providing quantitative estimates wouldn't necessarily improve the *accuracy* of their predictions, but it would at least reduce the chances of miscommunication.⁷⁰

Despite the potential benefits of numeric probabilities, professionals in many different fields that rely on subjective probabilities, including law, generally resist expressing their predictions quantitatively.⁷¹ Why? On the self-serving side, using verbal probabilities can be a way to avoid accountability.⁷² But there are also more principled reasons to be wary of quantitative estimates.

First, there is the inherent comfort in using words to communicate subjective probabilities. “[R]esearch has shown that people overwhelmingly prefer to communicate uncertainty using vague verbal terms . . . because these terms are perceived to be more intuitive and natural.”⁷³ In particular, professionals engaged in fields grounded in the humanities—such as law and intelligence—may simply be more comfortable (and better at) expressing ideas in words rather than in numbers.⁷⁴ For professionals accustomed to dealing in words, translating their assessments into numbers could be like trying to think or communicate in a foreign language, which could introduce its own potential for error.⁷⁵

70 *Id.* (“If analysts conveyed probability assessments using numbers, then these assessments might not always be accurate, but at least they would be clear.”); Karelitz & Budescu, *supra* note 37, at 26 (“Undoubtedly, one could reduce the communication errors that result from the different meanings people attribute to probability phrases by avoiding words and using only numerical probabilities.”); Ronald David Greenberg, *The Lawyer’s Use of Quantitative Analysis in Settlement Negotiations*, 38 BUS. LAW. 1557, 1583 (1983) (“[T]he use of quantitative analysis in settlement negotiations will not yield mystically accurate estimates, but a lawyer’s use of quantitative techniques in counseling could lead to . . . more effective communication between lawyers and clients . . .”).

71 Osbeck, *supra* note 1, at 56 (noting that “lawyers typically don’t assign percentages” to their predictions about whether various elements of a cause of action are likely to be satisfied); Friedman et al., *supra* note 63, at 410 (noting that an “aversion to clear probabilistic reasoning is common throughout foreign policy”).

72 See Ho et al., *supra* note 37, at 54 (noting that conveying likelihoods in numeric values “may impose greater accountability and expose errors in judgment”); Langevoort & Rasmussen, *supra* note 25, at 418 (noting that the use of verbal probabilities to give legal advice could be “self-serving,” since “the vagueness of the representations makes it more difficult to second-guess the advice when there has been a bad outcome”).

73 Ho et al., *supra* note 37, at 54.

74 Legendary CIA figure Sherman Kent derided intelligence analysts with this mindset as “poets,” as opposed to the “mathematicians,” who were more comfortable with quantitative estimates. Kent, *supra* note 38, at 56–57. Harvard law professor Detlev Vagts was a bit less charitable to both sides in the title of a 1979 article, suggesting that lawyers’ methods of rendering predictions resembled either “haruspex”—ancient soothsayers who divined the future by reading animal entrails—or “bookies.” See Vagts, *supra* note 27; Merriam-Webster, *Haruspex*, <https://www.merriam-webster.com/dictionary/haruspex>.

75 Friedman, *supra* note 69, at 809 (“Some scholars argue that analysts naturally think about uncertainty qualitatively This perspective implies that quantifying probability assessments is like expressing complex ideas in a second language, conveying information in a format that induces avoidable errors in judgment.”); Robert P. Rothman, *Tax Opinion Practice*, 64 TAX LAW. 301, 326 (2011) (arguing that lawyers avoid making quantitative predictions, in part, because “many lawyers . . . tend to think more in qualitative than in quantitative terms”); McCauliff, *supra* note 30, at 1332 (noting, in reporting survey results where judges were asked to quantify burdens of proof, that some judges noted that percentages “are not the terms in which judges think”). As Greg Mitchell points out, however, the process of forcing analysts to think in unfamiliar, quantitative ways could actually *improve* the deliberative process. For example, in the context of jurors applying burdens of proof, “framing the jurors’ task in quantitative terms may activate a more deliberate, rational evaluation of the evidence.” Gregory

Second, decisionmakers who *receive* estimates may, similarly, be better equipped to assess qualitative estimate. As one senior CIA officer explained about intelligence reports, “most consumers of intelligence aren’t particularly sophisticated when it comes to probabilistic analysis. They like words and pictures, too. My experience is that [they] prefer briefings that don’t center on numerical calculation.”⁷⁶ While study participants often express a preference for receiving probabilistic information quantitatively,⁷⁷ decisionmakers face impediments to actually using numerical probabilities effectively. Evidence suggests that large swaths of the population have low functional numeracy—“the ability to comprehend, use, and attach meaning to numbers”⁷⁸—leaving even well-educated people often unable to fully understand numeric probabilities.⁷⁹ And quantitative probabilities are not free from context effects; the framing of a numerical probability—for example, expressing a medical risk in terms of the likelihood of survival or death—can affect how it is interpreted.⁸⁰

Another concern is that using numbers to express likelihoods could create a false sense that such predictions are inherently better or more accurate than qualitative assessments.⁸¹ Because people tend to associate numerical probabilities with precision,⁸² “quantifying probability assessments [could] cause decision makers to see these estimates as being more scientific than they really are.”⁸³ This could lead decisionmakers to

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 Mitchell, *Second Thoughts*, 40 MCGEORGE L. REV. 687, 720–21 (2009). Precisely “because communicating a vote quantitatively is less natural and more difficult than expressing a vote in a verbal format, a juror who must communicate his or her vote numerically is likely to experience greater metacognitive discomfort during deliberations,” leading the juror to be “more likely to engage in greater monitoring of his or her information processing.” *Id.* at 721; cf. Greenberg, *supra* note 70, at 1585 (suggesting that a lawyer who uses quantitative analysis and communication “will be forced to think more precisely about each aspect of the case, and thus his judgment about the whole case should become more acute”).

76 Michael Schrage, *What Percent is ‘Slam Dunk’?*, WASH. POST, Feb. 20, 2005, at B01; see also N. Zoe Hilton et al., *Communicating the Risk of Violent and Offending Behavior: Review and Introduction to this Special Issue*, 33 BEHAV. SCI. & L. 1, 8 (2015) (noting, in the context of legal cases involving risk of future violent conduct, “[f]orensic practitioners, judges, and jurors alike typically prefer nominal labels over quantitative information”).

77 See, e.g., Thomas S. Wallsten et al., *Preferences and Reasons for Communicating Probabilistic Information in Verbal or Numeric Terms*, 31 BULL. PSYCHONOMIC SOC’Y 135, 137–38 (1993).

78 Wendy Nelson et al., *Clinical Implications of Numeracy: Theory and Practice*, 35 ANNALS BEHAV. MED. 261, 263 (2008).

79 See, e.g., Angela Fagerlin, *Quantity Information*, in U.S. FOOD & DRUG ADMIN., COMMUNICATING RISKS AND BENEFITS: AN EVIDENCE-BASED USER’S GUIDE 53 (Baruch Fischhoff, Noel T. Brewer & Julie S. Downs eds., 2011) (“Approximately 50% of Americans cannot accurately calculate a tip. Almost a quarter of college educated adults do not know what is a higher risk: 1%, 5%, or 10%.”).

80 See, e.g., MICHAEL D. MASTRANDREA ET AL., GUIDANCE NOTE FOR LEAD AUTHORS OF THE IPCC FIFTH ASSESSMENT REPORT ON CONSISTENT TREATMENT OF UNCERTAINTIES 2 (2010), https://wg1.ipcc.ch/AR6/documents/AR5_Uncertainty_Guidance_Note.pdf (suggesting that “a 10% chance of dying is interpreted more negatively than a 90% chance of surviving”) [hereinafter IPCC GUIDANCE NOTE].

81 Ho et al., *supra* note 37, at 54.

82 Ferson, *supra* note 35, at 31 (“Numbers expressed without hedge words are very likely to be commonly misunderstood as being more precise [than] they actually are.”); Wallsten, *supra* note 77, at 137.

83 Friedman, *supra* note 69, at 804; cf. Paul Slovic et al., *Violence Risk Assessment and Risk Communication: The Effects of Using Actual Cases, Providing Instruction, and Employing Probability Versus Frequency Formats*, 24 L. & HUM. BEHAV. 271, 272 (2000) (noting one reason for clinicians’ reluctance to use numerical probabilities is “their view that ‘the state of the research literature doesn’t justify using specific numbers’”).

wrongly believe that they “possess a stronger evidentiary basis for evaluating choices under uncertainty.”⁸⁴ Indeed, when dealing with truly subjective probabilities—where, as in law, the process of arriving at the prediction typically can’t be done with mathematic or scientific rigor⁸⁵—some question the very idea of trying to quantify predictions:

[T]he nuances involved in making judgment calls on [legal] issues do not really lend themselves to odds-making; the use of numbers suggests a level of precision that is inconsistent with the basic process. Also, since, by definition, there can be no repeatability in a large number of independent trials, the concept of probability is not very meaningful.⁸⁶

But just because legal predictions are subjective doesn’t mean they can’t be expressed quantitatively. While it’s true that “[s]ubjective probabilities can rarely be calibrated with the precision of gambling odds or actuarial tables, . . . they can always be quantified,”⁸⁷ whether as a range (50-80%) or boiled down to a single point estimate (65%).⁸⁸ Moreover, because legal opinions are widely understood to be subjective and highly uncertain, there may be less risk that a client would interpret numerical

⁸⁴ Friedman, *supra* note 69, at 807; *see also* BINDER ET AL., *supra* note 64, at 410 (cautioning lawyers to “[r]efer to percentages only if you can reasonably estimate what they are” because “percentages may falsely imply more expertise or certainty than you truly possess”); Richard Lavoie, *Analyzing the Schizoid Agency: Achieving the Proper Balance in Enforcing the Internal Revenue Code*, 23 AKRON TAX J. 1, 20–21 (2008) (“A conclusion regarding the legal strength of a position represents a reasoned and considered judgment rather than a mathematical certainty. Since it is based in no small measure on the experience and knowledge of the appraiser, assigning a specific percentage probability to such an assessment arguably misleads the client regarding the underlying basis and actual certitude of the appraisal.”).

⁸⁵ While this has traditionally been the case in predicting legal outcomes, new computing tools may allow lawyers to evaluate large numbers of past cases in a way that could make predictions more mathematically rigorous. *See generally* Osbeck, *supra* note 1, at 81–101 (discussing emerging technological tools and the prospects of using computer-driven data analytics to predict judicial outcomes).

⁸⁶ Rothman, *supra* note 75, at 326; *see also* Langevoort & Rasmussen, *supra* note 25, at 417 (noting that most lawyers avoid giving quantitative probabilities, “[c]iting long-standing custom . . . that the process of legal inference is too imprecise to quote odds in mathematical form”).

⁸⁷ Friedman & Zeckhauser, *supra* note 36, at 80; Beyth-Marom, *supra* note 48, at 258.

⁸⁸ Even if the best an attorney could do is provide a *range* of quantitative probabilities, it would still eliminate the ambiguity associated with interpreting verbal probabilities. Beyth-Marom, *supra* note 48, at 258. Moreover, numerical ranges can be distilled to point estimates for decisionmaking purposes. *See* Friedman & Zeckhauser, *supra* note 36, at 90 (“Absent additional information to say whether any parts of a range are more plausible than others, decision makers should treat an estimate that some event is ‘between 40 and 80 per cent likely to occur’ just the same as an estimate that the event is 60 per cent likely to occur . . .”).

⁸⁹ Lavoie, *supra* note 84, at 21; *id.* (suggesting that, in the legal context, numerical predictions are “a short hand to succinctly convey that assessment to others” and that “[v]iewed in this light, it makes little difference whether words or percentages are used to express these probability assessments”); Vagts, *supra* note 27, at 427 (“The fact that [particular legal matters] are fraught with uncertainty is not an item of news to the sophisticated client and it is hard to see how attaching numbers to that uncertainty would corrupt such a party.”); ABA, *Statement of Policy Regarding Lawyers’ Responses to Auditors’ Requests for Information*, 31 BUS. LAW. 1709, 1722 (1976) (asserting that when lawyers provide numerical estimates about the likelihood of success in a matter, “the quantification is generally only undertaken in an effort to make meaningful, for limited purposes, a whole host of judgmental factors applicable at a particular time, without any intention to depict ‘probability’ in any statistical, scientific or empirically-grounded sense”).

probabilities as “absolute and precise strength assessments”—especially when dealing with sophisticated clients.⁸⁹

Still, while there have been some calls for lawyers to quantify their legal opinions,⁹⁰ and “[n]o doubt it is the way some lawyers do counsel their clients,”⁹¹ lawyers generally avoid doing so.⁹² Indeed, some commentators imply that attaching numbers to legal advice would be unseemly—akin to bookmaking.⁹³

C. A hybrid approach: standardized probability lexicons

So where does that leave us? Qualitative probability words feel natural, but they’re vague. Quantitative probabilities are more precise, but they’re also susceptible to misunderstanding and, besides, they’re a non-starter for many professionals, including lawyers. Fortunately, a third, hybrid approach exists: the standardized probability lexicon.⁹⁴ In this approach, analysts adopt specific, qualitative terms for likelihoods, assign those terms relative or numerical values—often as ranges of percentages—and then explain the assigned meanings to the audience.⁹⁵ Such lexicons have been attempted in many technical areas.⁹⁶

90 See BINDER ET AL., *supra* note 64, at 409 (urging lawyers to “state predictions as numerical probabilities when practical”); Greenberg, *supra* note 70, at 1579–86 (advocating for lawyers to use quantitative techniques and terminology when counseling clients).

91 Langevoort & Rasmussen, *supra* note 25, at 417; *see also* SHAPO ET AL., *supra* note 23, at 302 (“Some lawyers suggest that stating the percentage likelihood of success is easier for the client to evaluate [*You have a 70% likelihood of success if you go to trial.*] than a general statement [*You have a pretty good chance to win if you go to trial.*]”); Lavoie, *supra* note 84, at 5 n.19 (“While historically tax practitioners were reluctant to undertake such quantifications of their opinions, most tax practitioners now routinely use such percentages in describing their assessments.”).

92 Langevoort & Rasmussen, *supra* note 25, at 417 (noting that “most” lawyers “resist giving probabilistic advice”); Osbeck, *supra* note 1, at 56; Robert J. Rhee, *A Price Theory of Legal Bargaining: An Inquiry into the Selection of Settlement and Litigation Under Uncertainty*, 56 EMORY L. J. 619, 654 n.159 (2006) (“[M]ost lawyers do not quantify the chances of success.”); Vagts, *supra* note 27, at 423 (asserting that giving legal opinions with numerical probabilities “is not generally done”); ABA, *supra* note 89, at 1722 (recognizing that “[l]awyers do not generally quantify for clients the ‘odds’ [of success in litigation] in numerical terms . . .”).

93 RAMBO & PFLAUM, *supra* note 20, at 178 (“[W]e say the court ‘probably’ will do so and so, *not* that there’s a ‘75% chance’ of it doing so and so. We’re lawyers, not bookies.”); *see also* Rothman, *supra* note 75, at 326 (noting that tax lawyers avoid quantifying uncertainty because they “like to believe (or at least like to give the impression to our clients) that what we do is different than handicapping racehorses”); Langevoort & Rasmussen, *supra* note 25, at 417 (noting that some lawyers suggest that using numerical probabilities would “raise ethical concerns about equating legal advice with betting odds”).

94 See Mandeep K. Dhami, *Towards an Evidence-Based Approach to Communicating Uncertainty in Intelligence Analysis*, 33 INTELLIGENCE & NAT’L SEC. 257, 258 (2018); Ho et al., *supra* note 37, at 54.

95 See Ho et al., *supra* note 37, at 54 (describing the use of standardized probability lexicons that “tie the verbal terms to specific numerical values or ranges”); Dianne C. Berry et al., *Patients’ Understanding of Risk Associated with Medication Use Impact of European Commission Guidelines and Other Risk Scales*, 26 DRUG SAFETY 1, 2 (2003) (“One approach to simplifying and standardiz[ing] the presentation of probabilistic information (such as when informing patients about the benefits and risks associated with particular medicines) has been to produce sets of verbal descriptors that correspond to specific probability ranges.”).

96 Ferson, *supra* note 35, at 23.

The probability-lexicon approach seeks to combine the intuitive feel of verbal probabilities with the clarity of numerical probabilities.⁹⁷ But even this approach has potential pitfalls. First, standardized lexicons with established ranges may not be fine-grained enough to allow for discrimination within the ranges—a particular problem when trying to convey very small or very large probabilities. For example, if a probability lexicon uses the term “remote” to describe anything between 0 and 10 percent probability, that word “could be one in ten, one in a hundred, or one in a million, and [the standardized lexicon] provides no way to tell these estimates apart.”⁹⁸

Second, because probability lexicons are typically developed by relatively small groups of experts based on the intuition and experience of group members, the lexicons may not reflect how audiences—who may differ in important ways from the lexicon creators—will naturally view prescribed expressions.⁹⁹ Indeed, research shows that “[e]ven when [audiences] receive explicit lexicons, they often still interpret those terms in ways that authors did not intend.”¹⁰⁰

Still, given lawyers’ antipathy toward expressing predictions solely in quantitative terms, standardized probability lexicons seem like a promising option for reducing ambiguity when conveying legal uncertainty. So how would one go about constructing such a lexicon for general, predictive legal writing? The next section surveys legal and non-legal fields in an effort to answer that question.

III. Developing a general legal writing probability lexicon

To help define the vague verbal probabilities used most often in legal writing, this section surveys a number of legal and non-legal fields that have attempted to create standardized probability lexicons. This section then uses these previous examples—along with empirical research—to propose a probability lexicon for general, predictive legal writing.

⁹⁷ See Dhami, *supra* note 94, at 267 (calling the use of a “standardized uncertainty lexicon” in intelligence fields a “compromise” between those that favor qualitative probability expressions and those that argue for numerical expressions); see also Beyth-Marom, *supra* note 48, at 268; Tavana et al., *supra* note 49, at 134.

⁹⁸ Friedman & Zeckhauser, *supra* note 36, at 91.

⁹⁹ Ho et al., *supra* note 37, at 54 (explaining that because probability lexicons often “are developed by fiat and reflect the perceptions, perspectives, and experiences of small committees of experts in a given field . . . [r]arely do they adequately consider the wide diversity of backgrounds and perspectives of target audiences”); *id.* at 51 (noting that probability lexicons “tend to be developed ‘in house,’ often based on whatever seems to make sense at the time”); see also Dhami, *supra* note 94, at 267 (noting that one barrier to creating a standardized probability lexicon is that “people find it difficult to suppress their normal meanings of linguistic probabilities i.e., how they would use a phrase in an everyday context . . .”).

¹⁰⁰ Jeffrey A. Friedman et al., Why Quantitative Probability Assessments Are Empirically Justifiable in Foreign Policy Analysis 5 (Dec. 11, 2015) (unpublished manuscript), https://pdfs.semanticscholar.org/3d11/ba65cc4874358c2e2f9e66643040d23a574.pdf?_ga=2.229490328.589622241.1526304791-1383481732.1526304791.

A. Probability lexicons in legal contexts

While all lawyers render predictions in their roles as advisors, some practice areas have adopted standardized terminology to convey predictions about legal outcomes. This section examines three areas of law—closing opinion practice, auditor inquiry responses, and tax opinion practice—that have done just that, either through regulatory edict, customary practice, or a combination. While these experiences offer hope for the possibility of adopting widely accepted, standardized terminology, they also highlight the difficulty in generating consistent meanings among lawyers and their audiences.

1. Closing opinions

One specialized legal context for delivering opinions is the formal “closing opinion”—often delivered in the context of a business or real estate transaction to third parties as an assurance that certain preconditions for the deal are or will be present.¹⁰¹ The norms of closing opinions—including the language used to convey predictions about uncertain events—are governed largely by customary practice and often codified in reports drafted by bar association committees.¹⁰²

Unlike many other types of legal opinions, closing opinions typically lack an explanation of the analysis supporting the opinion.¹⁰³ Still, “opinion givers may include their legal analysis in an opinion when they believe it involves a difficult or uncertain question of professional judgment.”¹⁰⁴ Such opinions—called “reasoned” or “explained” opinions—include “a discussion of relevant statutory and judicial authorities, an analysis and application of the authorities to the facts and issues involved in the transaction, and a prediction of the likely judicial resolution of the matter if the issues were appropriately presented to a court.”¹⁰⁵ But, like all legal opinions, closing opinions “are expressions of professional judgment regarding the legal matters addressed and not guarantees that a court will reach any particular result.”¹⁰⁶

101 See GLAZER & FITZGIBBON, *supra* note 41, § 1.1; ABA Joint Drafting Comm., *Real Estate Finance Opinion Report of 2012*, 47 REAL PROP. TR. & EST. L.J. 213, 217 (2012).

102 GLAZER & FITZGIBBON, *supra* note 41, § 1.6.1 (noting that “opinion preparers should treat customary practice as their starting point” and that customary practice can be established by looking to “bar association reports, treatises, and articles” (internal quotation marks omitted)).

103 *Id.* § 3.3.

104 ABA Comm. on Legal Opinions, *Guidelines for the Preparation of Closing Opinions*, 57 BUS. LAW. 345, 349 (2001).

105 Joint Comm. of the Real Prop. Law Section of the State Bar of Cal. and the Real Prop. Section of the L.A. Cty. Bar Ass’n, *Legal Opinions in California Real Estate Transactions*, 42 BUS. LAW. 1139, 1151 (1987) [hereinafter *Legal Opinions in California Real Estate*]; see also ABA Joint Drafting Comm., *supra* note 101, at 247 (noting that a reasoned opinion “requires additional factual assumptions and an analysis of statutes, cases, and other law in the Opinion Jurisdictions and perhaps other sources, such as Restatements”).

106 ABA Comm. on Legal Opinions, *Legal Opinion Principles*, 53 BUS. LAW. 831, 832 (1998).

Closing opinions employ fairly standardized terminology to communicate likelihood. Traditionally, the strongest commonly accepted verbal probability has been “would”—as in, “*a court would hold [X]*”—which is appropriate when “no reasonable argument supports a contrary conclusion” or when binding precedent on the issue exists.¹⁰⁷ There is some debate as to whether the word “should” conveys a lower degree of certainty,¹⁰⁸ but more recent authorities suggest the modern trend is to treat the two terms equivalently.¹⁰⁹ “Should” or “would” opinions can also be modified by adding the lead-in phrase “*although the matter is not free from doubt.*”¹¹⁰ Including this phrase may convey a lower level of certainty by the lawyer, although “how much lower is an open question.”¹¹¹ The lowest level of certainty in common use appears to be the “more likely than not” reasoned opinion, which “may be appropriate where the relevant authorities are divided, unclear or not directly on point.”¹¹²

2. Auditor inquiry responses

Another legal area that uses specific probability language is the practice of responding to inquiries from accountants who are auditing a lawyer’s corporate client. When conducting audits, accountants routinely ask attorneys about matters that could affect a company’s finances, including “information regarding any pending litigation or unasserted claims,” and, more specifically, “[t]he degree of probability of an unfavorable outcome” in any such matter.¹¹³ But this practice creates ethical tensions between the lawyer’s need to maintain confidentiality about client matters and the accountant’s need to promote “public confidence in published financial statements.”¹¹⁴

To reconcile these competing needs, in 1976, the ABA adopted its *Statement of Policy Regarding Lawyers’ Responses to Auditors’ Requests for*

107 *Legal Opinions in California Real Estate*, *supra* note 105, at 1152.

108 *Local Counsel Opinion Letters in Real Estate Finance Transactions: A Supplement to the Real Estate Finance Opinion Report of 2012*, 51 REAL PROP. TR. & EST. L.J. 167, 214 n.93 (2016) (“Practitioners differ on whether the two words have different meanings in the context of such an opinion.”).

109 COMM. ON CORPS., STATE BAR OF CAL., REPORT OF THE COMMITTEE ON CORPORATIONS REGARDING LEGAL OPINIONS IN BUSINESS TRANSACTIONS 19 (2007 rev. ed.); GLAZER & FITZGIBBON, *supra* note 41, § 3.3 n.9.

110 *Legal Opinions in California Real Estate*, *supra* note 105, at 1152.

111 GLAZER & FITZGIBBON, *supra* note 41, § 3.3.

112 COMM. ON CORPS., *supra* note 109, at 19; *see also Legal Opinions in California Real Estate*, *supra* note 105, at 1152–53 (“[I]f the authority is divided or if reasonable contrary arguments exist, the lawyer may be required to analyze and balance many competing factors and a ‘more likely than not’ opinion may best express the lawyer’s conclusions.”).

113 R. Alexander Swider, Note, *Toeing the Line: The Delicate Balance Attorneys Must Maintain When Responding to Auditor Inquiry Request Letters*, 50 IND. L. REV. 969, 972 (2017); *see also* MORGAN ET AL., PROFESSIONAL RESPONSIBILITY: PROBLEMS AND MATERIALS 378–79 (13th ed. 2018).

114 ABA, *supra* note 89, at 1710; *see also* Swider, *supra* note 113, at 971–72.

*Information*¹¹⁵—sometimes referred to as a “treaty” between lawyers and accountants.¹¹⁶ The policy provides that lawyers should only offer predictions in the “relatively few clear cases where it appears to the lawyer that an unfavorable outcome is either ‘probable’ or ‘remote.’”¹¹⁷ The policy does not quantify the meanings of “probable” or “remote”; indeed, the policy downplays the very idea of predicting legal outcomes in numeric form, insisting that “as a general rule, it should not be anticipated that meaningful quantifications of ‘probability’ of outcome . . . can be given by lawyers in assessing litigation.”¹¹⁸ Instead, the policy uses other vague, verbal probabilities to define these terms. An unfavorable outcome is “probable” when it is “extremely doubtful that the client will prevail” and the chances of the client succeeding are “slight.”¹¹⁹ Conversely, an unfavorable outcome is “remote” when it is “extremely doubtful” the client will lose—or, in other words, when “the client may confidently expect to prevail on a motion for summary judgment.”¹²⁰ Interestingly, the ABA’s definition of “probable” is not only vague—it also differs significantly from accounting standards, which define “probable” as “likely to occur.”¹²¹

3. Tax opinion practice

The most highly developed probability lexicon comes from tax practice. Tax lawyers frequently give formal legal opinions—either to inform a client about the tax consequences of a given course of action or to fulfill a contractual obligation associated with a pending business deal.¹²² To reflect the uncertainty that surrounds many tax opinions,¹²³ tax practice has adopted specific verbal probabilities to indicate the likelihood that a particular position will be upheld. Some of these terms derive from statutory or regulatory requirements and, therefore, have specific legal consequences.¹²⁴ Others have simply grown up as a matter of customary practice.¹²⁵ “[T]ax advisors tend to be quite precise as to the particular term they choose; in practice, the terms are most certainly not interchangeable.”¹²⁶ While “[t]ax lawyers are notoriously, and understandably, reluctant to try to quantify what their comfort levels mean,”¹²⁷ commen-

115 ABA, *supra* note 89.

116 Swider, *supra* note 113, at 977; MORGAN ET AL., *supra* note 113, at 379.

117 ABA, *supra* note 89, at 1713 (emphasis added).

118 *Id.* at 1723.

119 *Id.* at 1723, 1713.

120 *Id.* at 1723.

121 *Id.* at 1719 (citing Financial Accounting Standards Board, *Statement of Financial Accounting Standards No. 5* (1975)); Swider, *supra* note 113, at 981.

122 Rothman, *supra* note 75, at 302.

123 *Id.* at 311.

124 *Id.* at 311–12; Cummings, *supra* note 16, at 1125.

125 Rothman, *supra* note 75, at 311–12.

126 *Id.* at 311.

127 *Id.* at 314.

tators have offered relatively consistent numerical estimates for these verbal probabilities.

The ends of the certainty spectrum are largely free from debate. The strongest opinion in tax practice is the “will” opinion—a “clean or unqualified opinion of near certainty, or as certain as things can be in the tax world.”¹²⁸ While such an opinion does not amount to a “guarantee of absolute certainty,”¹²⁹ a “will” opinion is appropriate when “there is merely arguable or colorable contrary view”¹³⁰ or when “there is no material risk of being wrong.”¹³¹ On the other end of the spectrum, “the lowest level at which there is some modicum of comfort as to a position”¹³² is “not frivolous,” meaning that the desired position is “merely arguable or merely colorable.”¹³³

Some verbal probabilities have been defined in regulations because they carry specific legal consequences. The clearest example is the “more likely than not” opinion.¹³⁴ The phrase “more likely than not” clearly implies a greater-than-50% chance of being sustained¹³⁵—a fact explicitly confirmed in Treasury regulations.¹³⁶ But it need not be much higher than 50%; the phrase “is generally understood to import only a slight preponderance.”¹³⁷ Other examples of prescribed levels of certainty include:

- **Reasonable basis:** Defined in regulations as “a relatively high standard of tax reporting” that is “significantly higher than not frivolous” and more than “merely arguable” or “merely a colorable claim.”¹³⁸
- **Realistic possibility of success:** This standard—no longer in effect—was previously defined by regulations as “approximately a one in three, or greater, likelihood of being sustained on its merits.”¹³⁹
- **Substantial authority:** Defined in regulations as “less stringent” than “more likely than not” but “more stringent” than a reasonable basis.¹⁴⁰ Commentators have consistently estimated “substantial authority” as conveying somewhere around a 40% likelihood of being sustained.¹⁴¹

Apart from these codified terms, other verbal probabilities are a bit more ambiguous. For example, take the word “should,” which—despite

¹²⁸ Cummings, *supra* note 16, at 1132; Sheldon I. Banoff & Richard M. Lipton, *Tax Opinions: Weasel Words?*, 83 J. TAX’N 125, 126 (1995).

¹²⁹ Rothman, *supra* note 75, at 312.

¹³⁰ Cummings, *supra* note 16, at 1132.

¹³¹ Rothman, *supra* note 75, at 312.

¹³² *Id.* at 324.

¹³³ Cummings, *supra* note 16, at 1126.

¹³⁴ See Rothman, *supra* note 75, at 308; Cummings, *supra* note 16, at 1128.

¹³⁵ Banoff & Lipton, *supra* note 128, at 125.

¹³⁶ 26 C.F.R. § 1.6662-4(d)(2) (2019).

¹³⁷ Cummings, *supra* note 16, at 1128.

¹³⁸ 26 C.F.R. § 1.6662-3(b)(3) (2019); Rothman, *supra* note 75, at 322; Cummings, *supra* note 16, at 1126.

¹³⁹ Cummings, *supra* note 17, at 1127; Rothman, *supra* note 75, at 321.

¹⁴⁰ 26 C.F.R. § 1.6662-4(d)(2); Rothman, *supra* note 75, at 319; Cummings, *supra* note 16, at 1127–28.

sounding normative—is used in the predictive sense of what a court *is likely to do*, not what a court *ought to do*.¹⁴² There appears to be broad agreement that a “should” opinion represents something between “more likely than not” and “will.”¹⁴³ Its precise meaning is a source of debate,¹⁴⁴ but consensus seems to have developed around a 70-to-80% probability.¹⁴⁵ Lastly, some commentators suggest that the phrase “although not [entirely] free from doubt” might convey a distinct likelihood or that using it might modify the strength of a “should” opinion.¹⁴⁶

3.1: Quantitative estimates of verbal probabilities in tax practice¹⁴⁷

Term	AICPA ¹⁴⁸	Rothman ¹⁴⁹	Banoff ¹⁵⁰	Lavoie ¹⁵¹
Will	90+%	90-95%	99.9%	>80%
Should	70-80	70-75	70-80	>66.7
More likely than not	>50	>50	50.01	>50
Substantial authority	40	35 - 40	35-40	>40
Realistic possibility of success	33.3	33.3	33-35	>33
Reasonable basis	-	20-30	>5-10 or >20 ¹⁵²	>20
Not frivolous	-	"?"	-	>10

141 Rothman, *supra* note 75, at 327; AM. INST. OF CERTIFIED PUB. ACCOUNTANTS, STATEMENTS ON STANDARDS FOR TAX SERVICES 3 (2010) [hereinafter AICPA STANDARDS], https://www.irs.gov/pub/irs-utl/statements_on_standards_for_tax_services.pdf; Cummings, *supra* note 16, at 1128 (citing Sheldon I. Banoff, *Dealing with the “Authorities”: Determining Valid Legal Authority in Advising Clients, Rendering Opinions, Preparing Tax Returns and Avoiding Penalties*, 66 TAXES 1072, 1127 (1988)); Lavoie, *supra* note 84, at 20.

142 Rothman, *supra* note 75, at 313.

143 Cummings, *supra* note 16, at 1129 (“[A] prudent reader likely would reason that a ‘should’ opinion conveys more certainty than more-likely-than-not and less than ‘will.’”); Banoff & Lipton, *supra* note 128, at 126 (describing one view among tax practitioners that “should” “comes somewhere in between ‘more likely than not’ and ‘will’”).

144 See Rothman, *supra* note 75, at 313 (“[T]he exact level of authority required to render a ‘should’ opinion is probably among the least well-defined of the various levels.”); Cummings, *supra* note 16, at 1129.

145 AICPA STANDARDS, *supra* note 141, at 3; Rothman, *supra* note 75, at 327; Lavoie *supra* note 84, at 20.

146 See Cummings, *supra* note 16, at 1128 (“Although not [entirely] free from doubt: This standard applies to a reasoned opinion that concludes at less than the highest degree of certainty, but greater than more likely than not.”). Others, however, suggest there is “no consistent practice as to the use” of the phrase. Rothman, *supra* note 75, at 325.

147 Readers who enjoy this chart may also enjoy a facetious tax probability lexicon printed in *Tax Notes* that included verbal probabilities for every percentage between 1 and 100. The scale includes such labels as “I would tell my mother to do this” (91%), “if we get the right judge” (44%), “maybe Enron would do this” (14%), and “you have got to be joking” (7%). Anonymous, *A Detailed Guide to Tax Opinion Standards*, 106 TAX NOTES 1469, 1469–71 (Mar. 21, 2005).

148 AICPA STANDARDS, *supra* note 141, at 3.

149 Rothman, *supra* note 75, at 327.

150 The predictions for “will,” “should,” and “more likely than not” come from Banoff & Lipton, *supra* note 128, at 126. The authors were not necessarily asserting their own prediction as to the quantitative meanings but, rather, opining on the beliefs of tax attorneys who saw the “should” opinion as a distinct entity between “will” and “more likely than not.” The “substantial authority” and “realistic possibility of success” standards come from Banoff, *supra* note 141, at 1127.

151 Lavoie, *supra* note 84, at 20.

152 According to Banoff, “experienced tax advisors and return preparers have stated that a “reasonable basis” could be “as low as a 5 percent or 10 percent threshold chance of success, or alternatively a higher minimum standard, e.g., 20 percent.” Banoff, *supra* note 141, at 1127.

4. Takeaways from legal contexts

The approaches taken by these practice areas offer some promise for anyone hoping to standardize or define verbal probabilities in general legal writing. First, they suggest that it *is* possible to develop a widely adopted probability lexicon and considerable agreement about the meanings of those terms. The tax context, in particular—with its consistent use of terminology and a high degree of consensus on corresponding numerical meanings—suggests that advancing a common probability lexicon, by way of enacted law or by customary practice, can be effective in standardizing terminology. The tax lexicon also suggests that an effective legal probability scale can contain a fairly large number of separate probabilities and also use fine-grained differences between levels—for example, clearly delineating between “a realistic possibility of success” at 33% and “more likely than not” at 50+%, while making room for “substantial authority” as a separate category in between.

At the same time, lingering debates about the meanings of various terms—for example, whether “would” and “should” are equivalent or the effect of the phrase “although not entirely free from doubt”—highlight the difficulty in reaching consensus in the relative meanings of certain verbal probabilities, let alone their numerical meanings. And even when *lawyers* can manage to get on the same page, there may be difficulty in getting non-lawyer audiences to adopt that same meaning, as evidenced by the lawyer’s and accountant’s competing definitions of “probable.”

B. Probability lexicons in non-legal contexts

In addition to these legal examples, we can also turn to other disciplines that have attempted to standardize the way their members convey probabilities in making predictions. The following sections survey three non-legal fields—medicine, national intelligence, and climate science—that have thought deeply about the issue.

1. Medicine

Like clients facing a legal issue, patients in a medical setting “must be able to understand the risks and benefits of the options they face in order to make informed decisions”¹⁵³ So doctors, like lawyers, also regularly make predictions—whether about the likelihood of a particular diagnosis or the chances of a new medication causing an adverse reaction.¹⁵⁴ Of course, there

153 See, e.g., Dianne C. Berry et al., *Is 15 Per Cent Very Common? Informing People About the Risks of Medication Side Effects*, 10 INT’L J. PHARMACY PRAC. 145, 145 (2002).

154 See, e.g., Mahsa Seyed-Hosseini et al., *Discussing Side Effects of Over-the-Counter Medicines: Impact of Adding Percentage Data*, 18 INT’L J. PHARMACY PRAC. 275, 275 (2010); O’Brien, *supra* note 51, at 98.

are differences between predictions in the medical field and those in the legal field. For one, risks communicated by doctors—for example, the risks of a side effect or surgical complication—are often very small, sometimes far less than 1%.¹⁵⁵ And doctors, unlike lawyers, often have a solid empirical basis for making predictions, as a result of medical trials.¹⁵⁶ Still, despite the availability of this evidence, medical providers regularly use verbal probabilities to communicate risks among themselves and to their patients.¹⁵⁷

Given the potential for miscommunication when using verbal probabilities, the medical community has taken the issue seriously and conducted many studies on the ways that medical practitioners and patients interpret verbal probabilities.¹⁵⁸ The results suggest that interpretations of verbal probabilities vary widely among medical care providers; these interpretive gaps grow even larger when medical professionals communicate with their patients.¹⁵⁹ For example, Figure 3.2 (*on the following page*) shows varying interpretations of the word “probable” from a number of medical studies.

“Because of the vagueness of terms and the possibility of confusion or miscommunication, medical practitioners have been urged by decision analysts and statisticians to quantify probabilities whenever possible, or at least [] use words and numeric estimates together.”¹⁶⁰ Commentators have also suggested that standardizing probability language in medicine could reduce ambiguity.¹⁶¹ But calls for profession-wide standardization have

¹⁵⁵Mazur & Merz, *supra* note 65, at 419.

¹⁵⁶ See Michael A. Nakao & Seymour Axelrod, *Numbers are Better than Words: Verbal Specifications of Frequency Have No Place in Medicine*, 74 AM. J. MED. 1061, 1065 (1983) (suggesting that when making estimates, doctors “should determine from the literature the reported frequency of events, and should use those numbers”).

¹⁵⁷ See, e.g., O’Brien, *supra* note 51, at 98 (“Given the many uncertainties which surround the practice of medicine, a common feature of communication is the use of expressions such as ‘likely’ or ‘probable.’”); Ruta Sawant & Sujit Sanggiry, *Communicating Risk of Medication Side-Effects: Role of Communication Format on Risk Perception*, 16 PHARMACY PRAC. 1174, 1175 (2018) (noting that “pharmacists mostly use vague word-only descriptions in their counseling session with patients”).

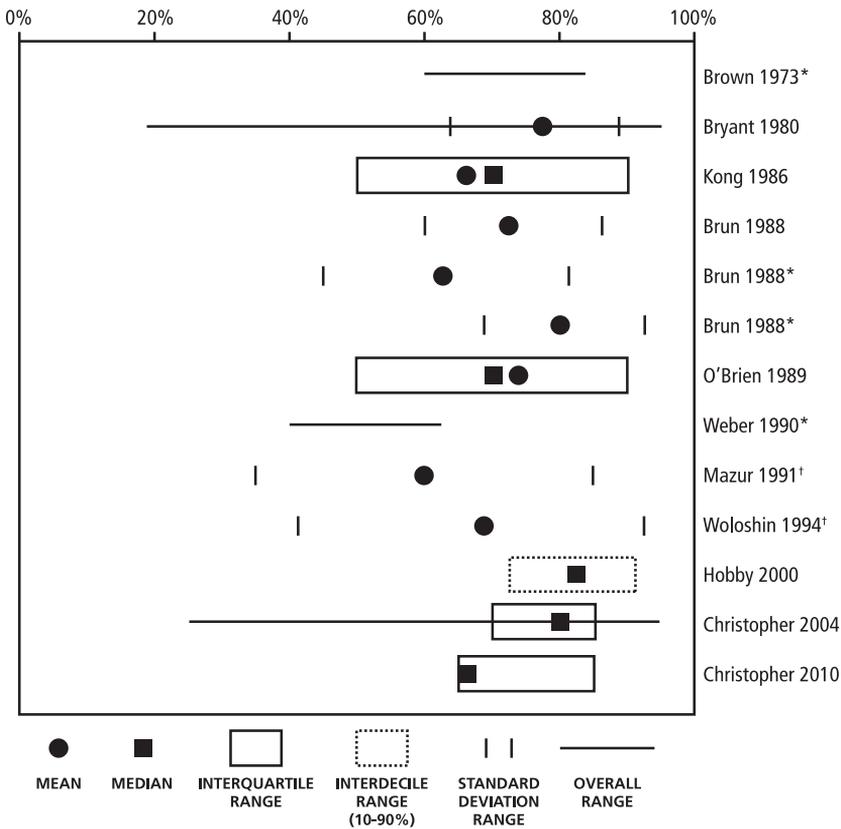
¹⁵⁸ See generally David A. Hanauer et al., *Hedging their bets: the use of uncertainty terms in clinical documents and its potential implications when sharing the documents with patients*, 2012 AMIA Annual Symposium Proceedings Archive 321, 321 (Nov. 3, 2012), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3540426> (noting and discussing “numerous attempts [that] have been made to study clinicians’ use of hedging phrases, particularly with respect to probability expressions”).

¹⁵⁹ See, e.g., Malcolm Man-Son-Hing et al., *The Effect of Qualitative vs. Quantitative Presentation of Probability Estimates on Patient Decision-Making: A Randomized Trial*, 5 HEALTH EXPECTATIONS 246, 247 (2002) (“Previous work has demonstrated that both patients and physicians give wide ranges of numerical ratings for words and phrases that denote frequency or likelihood”); Nakao & Axelrod, *supra* note 156, at 1065 (“[Our] results . . . highlight the folly of assuming that any two randomly chosen physicians are likely to have similar percentages in mind when they use any [verbal probability] term; and the likelihood of misunderstanding is even greater in physician/layman communication.”).

¹⁶⁰ Mazur & Merz, *supra* note 65, at 418 (internal citations omitted); see also Fagerlin, *supra* note 79, at 59–60 (urging medical professionals to “[p]rovide numeric likelihoods of risks and benefits” and calling verbal probability expressions “ineffective”).

¹⁶¹ See, e.g., Sawant & Sanggiry, *supra* note 157, at 1179 (“Standardization of verbal descriptors may help in minimizing the variability in gist interpretations and more accurate perceptions of risk in the future.”).

3.2: Numerical estimates of the word “probable” from medical verbal-probability studies¹⁶²



generally gone unheeded—with one notable exception. In 1998, the European Commission’s Pharmaceutical Committee adopted guidelines governing drug labels and accompanying risk information.¹⁶³ These guidelines included a recommended probability lexicon tying the frequency of side effects to specific verbal probabilities—ranging from “very rare” (a side effect expected in fewer than 1 in 10,000 patients) to “very common” (expected in more than 1 in 10 patients).¹⁶⁴

These terms and their associated probability ranges, however, were not chosen based on empirical evidence,¹⁶⁵ and subsequent research

¹⁶² This chart is reprinted from Hanauer et al., *supra* note 158, at 324.

¹⁶³ See EUROPEAN COMM’N PHARM. COMM., A GUIDELINE ON THE READABILITY OF THE LABEL AND PACKAGE LEAFLET OF MEDICINAL PRODUCTS FOR HUMAN USE (Sept. 29, 1998), <http://www.pharma-eu.com/pdfs/Guideline%20on%20Readability%20EMEA.pdf>; Rebecca K. Webster et al., *How Does the Side-Effect Information in Patient Information Leaflets Influence Peoples’ Side-Effect Expectations? A Cross-Sectional National Survey of 18-to 65-Year-Olds in England*, 20 HEALTH EXPECTATIONS 1411, 1412 (2017).

¹⁶⁴ Berry et al., *supra* note 95, at 2–3.

¹⁶⁵ See *id.* at 2.

suggested that audiences—both lay and professional—understand these terms far differently than the guidelines intended them. Indeed, multiple studies showed that “members of the general public significantly overestimate[d] the likelihood of adverse effects” when presented with the guidelines’ verbal probabilities.¹⁶⁶ For example, in one study, participants estimated that a “common” drug side effect would occur in 45% of patients—far higher than the 1-10% intended by the guidelines.¹⁶⁷ Subsequent versions of the European Commission’s drug labeling guidelines have dropped these prescribed probability phrases.¹⁶⁸

2. National Intelligence

Another field that has thought extensively about its methods of communicating predictions is national intelligence. Estimating likelihood is an essential task in the intelligence field,¹⁶⁹ and these estimates often involve considerable uncertainty.¹⁷⁰ But intelligence estimates “rarely come with explicit probabilities attached.”¹⁷¹ As a result, “[v]ague probability assessments are both common and deliberate in national security decision making.”¹⁷²

Since the mid-twentieth century, the national intelligence community has contemplated using uniform lexicons to convey likelihood estimates—exemplified by Sherman Kent’s 1964 article *Words of Estimative Probability*.¹⁷³ Kent and fellow intelligence official Max Foster (a lawyer by training) proposed a spectrum of seven words and phrases that corresponded to point estimates, surrounded by approximate buffers.¹⁷⁴

3.3: Sherman Kent’s proposed probability lexicon

Certain[]	100%
Almost certain	93 +/- ~6
Probable	75 +/- ~12
Chances about even	50 +/- 1
Probably not	30 +/- ~6
Almost certainly not	7 +/- ~5
Impossible[le]	0

166 *Id.*; see also P. Knapp, *Perceived Risk of Medicine Side Effects in Users of a Patient Information Website: A Study of the Use of Verbal Descriptors, Percentages and Natural Frequencies*, 14 BRIT. J. HEALTH PSYCHOL. 579, 592 (2009).

167 See Berry, *supra* note 95, at 2.

168 See EUROPEAN COMM’N, A GUIDELINE ON THE READABILITY OF THE LABEL AND PACKAGE LEAFLET OF MEDICINAL PRODUCTS FOR HUMAN USE (Jan. 1, 2009), https://ec.europa.eu/health/sites/health/files/files/eudralex/vol-2/c/2009_01_12_readability_guideline_final_en.pdf; P. Knapp, *supra* note 166, at 592 (noting that a revised 2006 version of the guidelines “no longer ma[de] reference to the use of verbal descriptors”).

169 Kent, *supra* note 38, at 50.

170 Ho et al., *supra* note 37, at 8 (noting a study of intelligence forecasting accuracy, where only 29.5% of the forecasts implied certainty about an event—i.e., a probability of 0 or 1).

171 Schrage, *supra* note 76, at B01.

172 Friedman, *supra* note 69, at 804.

173 See Kent, *supra* note 38; Ho et al., *supra* note 37, at 54.

174 Kent, *supra* note 38, at 55.

Kent's ideas about quantifying and standardizing probability language met resistance from many colleagues during his time, and he eventually "dropped all thought of getting an agreed air-tight vocabulary of estimative expressions" adopted by the intelligence community.¹⁷⁵ But his ideas about precision and consistency caught on, and the U.S. intelligence community has subsequently made several attempts at creating standardized probability language for use in intelligence estimates. After September 11th, the National Intelligence Council employed five- and seven-grade scales of standardized verbal probability words—using words such as *Remote*, *Very unlikely*, *Unlikely*, *Even chance*, *Probably/Likely*, *Very likely*, and *Almost certainly*—but without tying them to numerical probabilities.¹⁷⁶ Similarly, a 2015 memorandum from the Defense Intelligence Agency laid out a lexicon of qualitative probability phrases—including a wider range of synonyms—to convey uncertainty but expressly rejected the notion of tying those to numerical values.¹⁷⁷ But, that same year, a directive from Director of National Intelligence (DNI) James Clapper embraced seven likelihood ranges with two verbal options and a corresponding numerical value for each range.¹⁷⁸

3.4: Probability lexicon, Director of National Intelligence Intelligence Community Directive No. 203

Almost certain / Nearly certain	90-99%
Very likely / Highly probable	80-95
Likely / Probable	55-80
Roughly even chance / Odds	45-55
Unlikely / Improbable	20-45
Very unlikely / Highly improbable	5-20
Almost no chance / Remote	1-5

The United States isn't the only country that has developed such a scale. The United Kingdom's Defence Intelligence has developed a similar lexicon—although, interestingly, this close U.S. ally's scale uses numerical values that differ *for every single category* from the American scale.¹⁷⁹

¹⁷⁵ *Id.* at 56.

¹⁷⁶ NAT'L INTELLIGENCE COUNCIL, NATIONAL INTELLIGENCE ESTIMATE: PROSPECTS FOR IRAQ'S STABILITY: A CHALLENGING ROAD AHEAD (Jan. 2007), <https://fas.org/irp/dni/iraq020207.pdf>; Friedman, *supra* note 69, at 805; Ho et al., *supra* note 37, at 59; Friedman & Zeckhauser, *supra* note 36, at 91.

¹⁷⁷ Friedman, *supra* note 69, at 804–05 (noting that the DIA memorandum expressly states that "*DIA does not condone the use of probability percentages in its products to portray likelihood*") (emphasis in original) (quoting Tradecraft Note 01-15: Expressing Analytic Certainty (Jan. 5, 2015)).

¹⁷⁸ INTELLIGENCE COMMUNITY DIRECTIVE NO. 203: ANALYTIC STANDARDS 3 (Jan. 2, 2015), <https://www.dni.gov/files/documents/ICD/ICD%20203%20Analytic%20Standards.pdf>.

¹⁷⁹ See Dhama, *supra* note 94, at 260; Ho et al., *supra* note 37, at 58.

3.5: Probability lexicon, UK Defence Intelligence

Almost certain	90-100%
Very likely	70-85
Likely / Probable	55-70
Realistic possibility	25-50
Unlikely / Improbable	15-20
Highly unlikely / Remote	0-10

While these probability scales may be official policy, “neither lexicon relies on systematic empirical research,”¹⁸⁰ which raises the potential that analysts and decisionmakers won’t actually use and interpret these probability phrases as they were intended. Indeed, subsequent studies have shown “potential inconsistencies” between analysts’ interpretation and the mandated lexicons,¹⁸¹ leading researchers to suggest revisions to the U.S. intelligence lexicon, as summarized in Figure 3.6.

3.6: Prescribed U.S. intelligence lexicon and participants’ interpretations from empirical studies¹⁸²

Term	US Intel Scale	Dhami	Ho et al. (PV Method)	Ho et al (MF Method)
Almost certain	95-99%	90%	80-100	90-100
Nearly certain		–	–	–
Very likely	85-90	70-90	75-80	80-90
Highly probable		80-90	–	–
Likely	55-80	60-80	60-75	50-80
Probable		60-90	–	–
Roughly even chance	45-55	–	45-60	45-60
Roughly even odds		–	–	–
Unlikely	20-45	10-40	25-45	20-40
Improbable		20-40	–	–
Very unlikely	5-20	10-20	15-25	15-25
Highly improbable		–	–	–
Almost no chance	1-5	–	–	–
Remote		10	0-15	0-10

3. Climate Science

Climate scientists—who must communicate to the public the likelihood of various outcomes relating to climate change—have also given serious thought

180 Ho et al., *supra* note 37, at 59; *see also* Dhami, *supra* note 94, at 259 (noting that “the standardized lexicons advocated by [intelligence organizations] have not been informed by empirical evidence”).

181 *See* Dhami, *supra* note 94, at 266; Ho et al., *supra* note 37, at 60.

182 *See* Dhami, *supra* note 94, at 265; Ho et al., *supra* note 37, at 61.

to the issue of communicating uncertain predictions.¹⁸³ In preparing its Assessment Reports, the Intergovernmental Panel on Climate Change (IPCC) has convened meetings with its working groups to discuss the issue.¹⁸⁴ The IPCC's Fourth and Fifth Assessment Reports used verbal probabilities that conveyed the likelihood of the group's estimates.¹⁸⁵ To clarify the group's intended meaning, the IPCC adopted standard verbal probabilities that the group defined with specific quantitative ranges. The group's standardized lexicon used ten likelihood qualifiers:

3.7: IPCC probability lexicon¹⁸⁶

Virtually certain	>99%
Extremely likely	>95
Very likely	>90
Likely	>66
More likely than not	>50
About as likely as not	33 to 66
Unlikely	<33
Very unlikely	<10
Extremely unlikely	<5
Exceptionally unlikely	<1

In addition to the group's internal discussion of its methods of communicating probability, multiple external studies have examined the way that lay audiences interpret the IPCC's probability terms; the results have not been encouraging.¹⁸⁷ These studies have generally shown that lay audiences' interpretations of these phrases can differ considerably from scientists' intended meanings—even when participants had been previously shown the IPCC's numerical conversion chart.¹⁸⁸ The effects were especially pronounced for phrases used to convey higher and lower probabilities, such as “very likely” or “very unlikely”; lay readers tended to have a much wider, more moderate interpretation of those terms than the IPCC intended to convey.¹⁸⁹ These studies

183 Ho et al., *supra* note 37, at 55.

184 IPCC GUIDANCE NOTE, *supra* note 80, at Annex A-1.

185 INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007 SYNTHESIS REPORT 27, 79, 83 (2008), http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_full_report.pdf; Nick Pidgeon & Baruch Fischhoff, *The Role of Social and Decision Sciences in Communicating Uncertain Climate Risks*, 1 NAT'L CLIMATE CHANGE 35, 37 (2011) (summarizing the Fourth Assessment's use of probabilistic language).

186 IPCC GUIDANCE NOTE, *supra* note 80, at 3.

187 See, e.g., Ho et al., *supra* note 37, at 55; David V. Budescu, *Improving Communication of Uncertainty in the Reports of the Intergovernmental Panel on Climate Change*, 20 PSYCHOL. SCI. 299, 299 (2009).

188 See Ho et al., *supra* note 37, at 58; Budescu, *supra* note 186, at 299 (summarizing findings by noting that “respondents' judgments [about likelihoods] deviated significantly from the IPCC guidelines, even when the respondents had access to these guidelines”).

189 See Ho et al., *supra* note 37, at 64.

have suggested several ways to improve audience comprehension, such as listing both the verbal probability and its numeric equivalents in a given sentence¹⁹⁰ or modifying the scale to better comport with readers' intuitive understanding of the terms.¹⁹¹

3.8: Suggested, evidence-based IPCC lexicon (Ho et al., 2015)¹⁹²

Term	IPCC Scale	Suggested, evidence-based lexicon	
		PV Method	MF Method
Very likely	>90%	80 - 100%	75 - 100%
Likely	>66	50-80	40-75
Unlikely	<33	20-50	15-40
Very unlikely	<10	0-20	0-15

4. Takeaways from non-legal fields

The non-legal examples outlined above offer several potential lessons. They suggest that it is possible to develop and implement standardized probability lexicons, even in fields—like national intelligence—that involve very subjective analysis and that have traditionally resisted quantifying their predictions. But this optimism comes with several caveats.

First, just because it is possible to develop a probability lexicon doesn't mean it will be an easy sell. After all, there was a fifty-year gap between the publication of Sherman Kent's *Words of Estimative Probability* in 1964 and the 2015 National Intelligence directive that adopted a standardized lexicon tied to numerical ranges. And, indeed, even when the Director of National Intelligence promulgated that scale, another American intelligence unit—the Defense Intelligence Agency—reiterated its opposition to numerical probabilities.¹⁹³ Plus, the fact that the American and British probability scales differ significantly suggests that even experts in identical fields can have difficulty reaching consensus on a consistent meaning of qualitative probability phrases.¹⁹⁴

Additionally, there is the possibility that lexicons may be used or interpreted very differently from the way they were intended. Subsequent research from all of these fields has shown that lay audiences—and even

¹⁹⁰ See Budescu, *supra* note 187, at 306 (suggesting that misinterpretation can be reduced by "supplementing verbal terms with numerical boundaries—for example, writing a sentence like "The Greenland ice sheet and other Arctic ice fields likely (66%-85%) contributed no more than 4m of the observed rise in sea level.").

¹⁹¹ See Ho et al., *supra* note 37, at 55.

¹⁹² The numbers in this chart correspond to the two different methods used in the Ho study—the peak value (PV) method and the membership function (MF) method—to measure lay interpretations of probability terms. *Id.* at 57.

¹⁹³ See *supra* note 178 and accompanying text.

¹⁹⁴ See Ho et al., *supra* note 37, at 59 (describing the discrepancy between the U.S. and UK probability scales as "startling" and "puzzling").

the professionals within those fields—may have intuitive understandings of probability expressions that differ widely from the prescribed numerical probabilities. But these same studies also offer a glimmer of hope: they show that probability language can be subjected to serious thought and empirical study—suggesting that a probability lexicon can be refined over time to improve its effectiveness.

Lastly, these fields’ experiences offer some guidance about actually using a probability lexicon: using *both* verbal and the corresponding numerical probabilities in close proximity should maximize its effectiveness and minimize the chance of misinterpretation.¹⁹⁵

C. Toward a general legal writing probability lexicon

We can use the lessons and examples discussed in this section to craft a workable legal writing probability lexicon. So, first, which words to include? Well, to reduce the potential for confusion, we want to avoid using anything that could imply a normative judgment or conflate a likelihood with the desirability of the outcome¹⁹⁶—so phrases like “should” or “good chance” are best left out. And because any attempt to implement a shared probability scale is a major undertaking,¹⁹⁷ to minimize disruption or confusion, the lexicon should incorporate existing guidance from the legal writing community and include terms that are already widely used. Overall, the DNI Directive terminology—based on variations of “likely” and “probable” with additional words like “almost certain” or “almost no chance” at the end-points—seems most consistent with the qualifiers already in common use in legal writing.¹⁹⁸

And what numbers should those words correspond to? In theory, lawyers wishing to use a probability lexicon could assign any values they like; defining the probability expressions for the audience would, itself, reduce ambiguity. But rather than “arbitrarily assigning numerical values to probabilistic expressions, we naturally want to match as closely as possible the general usage of the groups involved.”¹⁹⁹ By looking to previous attempts and studies, we can generate a best estimate of how audiences are likely to interpret probability expressions in legal writing. To

195 See *supra* notes 160 and 190 and accompanying text.

196 See *supra* note 60 and accompanying text.

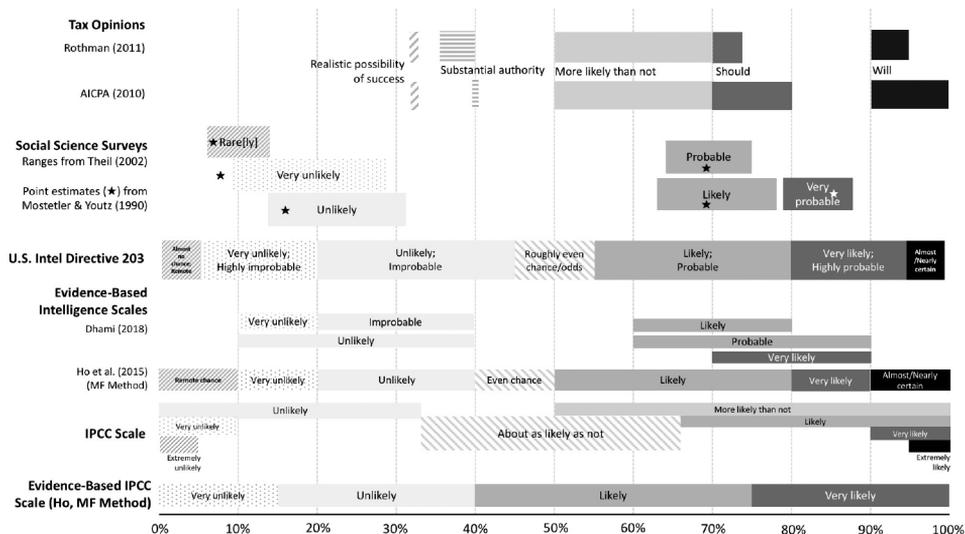
197 Beyth-Marom, *supra* note 48, at 268.

198 Compare *supra* note 21 and figure 1.1 with *supra* figure 3.3. See also Langevoort & Rasmussen, *supra* note 25, at 417 (“In practice, [legal] advice tends to be rendered within the framework of a more restrictive set of conventional locutions: sanction of the proposed course of action, for instance, might be said to be certain to occur; highly likely; likely; uncertain; unlikely; highly unlikely; or certain not to occur.”).

199 Augustine Kong et al., *How Medical Professionals Evaluate Expressions of Probability*, 315 NEW ENG. J. MED. 740, 743 (1986).

start, here are some of the previously discussed examples, laid out in a single chart:

3.9: Summary of probability lexicons and numerical ranges



Several patterns emerge from looking at these previous examples laid out side-by-side:

- **How many gradations?** To be useful, the probability scale must have enough discrete levels so that there is a meaningful difference among them, but a scale must not be so fine-grained as to imply scientific precision.²⁰⁰ The experience of tax opinion practice suggests that lawyers and clients can meaningfully distinguish between at least seven levels of certainty—a fact further supported by both the U.S. intelligence (7 gradations) and the IPCC (10 total gradations) probability scales. This is also consistent with empirical research, which has found that “subjects seem able to discriminate 7 levels of subjective confidence.”²⁰¹
- **The ends of the spectrum.** Nearly all of the previous examples support the notion that there are relatively clearly defined ends to the spectrum—corresponding roughly to the 0–10% range or the 90–100% range. On the lower end, these correspond to terms like

²⁰⁰ For example, Sherman Kent originally contemplated a scale comprising eleven probability words with corresponding numerical ranges, but he later decided to reduce the number of levels because “given the inexactness of the intelligence data [we] were working with, the distinctions [we] made between one set of odds and its fellows above and below were unjustifiably sharp.” Kent, *supra* note 38, at 55.

²⁰¹ Beyth-Marom, *supra* note 48, at 267.

“rare,” “remote,” or “almost certainly not,” while on the upper end, these are labeled as “almost certain” or “will.” And while the social science meta-analyses do not include a similar high-end estimate, they show that there is room for another category above “very probable”—which tops out around 87% probability.

- ***More likely than “more likely than not”?*** There appears to be a meaningful difference between “more likely than not” and “likely.” The social science suggests that people view “likely” somewhat higher—somewhere in the 60–75% range. This is also reflected in the IPCC’s scale—where “more likely than not” applies to any percentage about 50%, but “likely” requires at least 66% probability—and in the intelligence scales, where the “likely” category doesn’t begin until 55% probability and extends up to 70% or 80%. This seems consistent with general legal usage, where “more likely than not” implies only a “slight preponderance.”²⁰²
- ***“Likely” and “Probably” are synonyms.*** Both the empirical research and defense intelligence practice suggest that “likely” and “probably” are interpreted similarly and can be used interchangeably,²⁰³ which is promising, as legal writing guides commonly recommend both terms.²⁰⁴ But lawyers should be consistent within a given document by choosing either “likely” root words or “probable” root words and sticking with it.²⁰⁵

Combining previous lexicons and the empirical research discussed in this article, I propose the probability scale (*Figure 3.10*) reflects the best estimate for how audiences will interpret probability expressions in general, predictive legal writing.

A few thoughts about the proposed scale. First, the scale is asymmetrical, but that’s OK. This comes from separating “more likely than not” and “likely,” whereas there’s not a corresponding analog for “less likely than not” that would fall just below the 50% threshold. This asymmetry makes the scale somewhat less aesthetically pleasing, but it comports with previous studies, which have shown that positive and negative probability expressions (e.g., “likely” and “unlikely”) are not always perfect

202 See *supra* note 137 and accompanying text.

203 See, e.g., Ho et al., *supra* note 37, at 60 (reporting results and concluding that “probably” and “likely” “are, for all practical purposes, indistinguishable and thus can be treated as synonyms”); Robert T. Reagan et al., *Quantitative Meanings of Verbal Probability Expressions*, 74 J. APPLIED PSYCHOL. 433, 441 (1989) (concluding that expressions using the stem word “likely” were “synonymous” with expressions using “probable” (e.g., “very unlikely” and “very improbable”)); *supra* figure 2.1.

204 See *supra* note 22 and figure 1.1.

205 Cf. INTELLIGENCE COMMUNITY DIRECTIVE NO. 203, *supra* note 178, at 3 (“strongly encourag[ing]” analysts not to mix “likely” and “probably” root words).

3.10: Suggested probability lexicon for general legal writing

Almost certain	90-100%
Very likely / Very probable	75-90
Likely / Probable	60-75
More likely than not	50-60
Unlikely / Improbable	20-50
Very unlikely / Very improbably	10-20
Almost no chance	0-10

complements.²⁰⁶ Also, as a result of this asymmetry and to avoid gaps in the scale, the “unlikely”/“improbable” range comprises a large range—from 20% to 50%. In practice, however, the evidence suggests that audiences will interpret “unlikely” on the lower end of this scale—closer to the 20–30% range.²⁰⁷

Lastly, in terms of actually using this probability lexicon—or any other—the attorney must, of course, inform the audience of the lexicon being used. It may be tempting to simply take a probability scale and bury it in a footnote or an appendix to a memorandum and then use verbal probabilities in the main text. But because verbal probabilities can still be misinterpreted even if audiences have access to the probability lexicon in some format,²⁰⁸ the better practice would be to use *both* the verbal and numerical probabilities in close proximity to minimize the risk of misinterpretation.²⁰⁹ Applying this principle, a lawyer might write something like, “It is likely (a 60–75% probability) that a court would find . . .”

IV. Further opportunities for legal writing practitioners, scholars, and educators

The issue of communicating likelihood estimates to clients presents opportunities to all stakeholders in the legal writing community. For practitioners, the issues raised in this article present an opportunity to reevaluate the ways in which they communicate predictions to clients. For

206 See Kong et al., *supra* note 199, at 741; Reagan et al., *supra* note 203, at 440–41.

207 See *supra* figure 3.7.

208 See *supra* notes 100 and 188 and accompanying text.

209 See Vivianne H. M. Visschers, *Probability Information in Risk Communication: A Review of the Research Literature*, 29 RISK ANALYSIS 267, 270 (2009) (recommending that analysts “[p]resent both numerical and verbal probability information in a risk message”); Budescu, *supra* note 187, at 306 (recommending that verbal probability terms “should be accompanied by a range of probabilities,” noting that “supplementing verbal terms with numerical boundaries improve[s] the quality of communication considerably”); Monahan & Steadman, *supra* note 32, at 935 (noting that when communicating uncertainty “[t]he use of multiple risk formats might aid comprehension,” and suggesting a combination of qualitative risk categories and quantitative frequencies or probabilities).

example, lawyers could consider rethinking their traditional aversion to quantitative probabilities and begin to put their legal predictions into numbers. Or, if they prefer to continue using natural language, lawyers might consider supplementing their language with quantitative ranges—whether or not they adhere to the specific scale suggested in this article.

Issues of communicating predictions also provide opportunities for legal writing scholars. This article has attempted to estimate the most likely meanings of probability expressions as used in general legal analysis. But, ideally, the proposed scale would be just the start of a broader conversation.²¹⁰ Ultimately, for any probability lexicon to truly be effective, it should take into account the actual understandings of the analysts and audiences who will be using them.²¹¹ So, scholars should work to learn how lawyers and clients actually interpret verbal probability phrases in various counseling contexts, since interpretations are likely to change depending on the legal matters involved.²¹² Specifically, researchers should conduct studies—similar to those done in the fields of psychology,²¹³ medicine,²¹⁴ national intelligence,²¹⁵ and climate science²¹⁶—that ask participants to quantify or rank their interpretation of various probability phrases. The legal writing community—with scholars dedicated to empirically studying language use in legal contexts²¹⁷—is well-positioned to take up this task.

Legal writing scholars could also work to further explore the possibility of standardizing a lexicon of probability expressions. For lawyers and clients, bringing uniformity to uncertainty language “could reduce errors in communication of uncertainty and could consequently improve decision outcomes.”²¹⁸ And for the field of legal writing, in particular, the

210 Cf. Mosteller & Youtz, *supra* note 47, at 10 (presenting research on probability expressions that “invites preliminary discussion and criticism that could be the basis for additional work before firming up either form of codification”).

211 Dhami, *supra* note 94, at 267 (noting that “[a]n evidence-based approach to the development of a standardized lexicon” can improve its effectiveness); Ho et al., *supra* note 37, at 55.

212 Cf. O’Brien, *supra* note 51, at 100 (discussing the need to examine how patients’ understanding of probability phrases differs in different clinical contexts).

213 See generally Theil, *supra* note 43, at 178 (summarizing previous research on interpretations of qualitative probability expressions).

214 See, e.g., Mazur & Merz, *supra* note 65; Kong et al., *supra* note 199.

215 See Ho et al., *supra* note 37; Dhami, *supra* note 94.

216 See, e.g., Ho et al., *supra* note 37.

217 See, e.g., Shaun B. Spencer & Adam Feldman, *Words Count: The Empirical Relationship between Brief Writing and Summary Judgment Success*, 22 LEGAL WRITING 61 (2018); Kenneth D. Chestek, *Fear and Loathing in Persuasive Writing: An Empirical Study of the Effects of Negativity Bias*, 14 LEGAL COMM. & RHETORIC: JALWD 1 (2017); Kevin Bennardo, *Testing the Geographical Proximity Hypothesis: An Empirical Study of Citations to Nonbinding Precedents by Indiana Appellate Courts*, 90 NOTRE DAME L. REV. ONLINE 125 (2015); Lance N. Long & William F. Christensen, *Clearly, Using Intensifiers Is Very Bad—or Is It?*, 45 IDAHO L. REV. 171 (2008).

218 Karelitz & Budescu, *supra* note 37, at 26.

development of a probability lexicon also presents a discipline-building opportunity. In other areas of legal writing practice and pedagogy, scholars have noted the importance of common lexicons, since “without a developed, commonly shared and understood vocabulary, the [legal writing] discipline struggles and communication failure is common.”²¹⁹ The heads of the working groups of the IPCC, for example, convened a two-day meeting in 2010 to discuss how to ensure “[c]onsistent treatment and communication of uncertainty” in the Fifth Assessment.²²⁰ The legal writing community could convene a similar meeting—or, perhaps, a simple workshop session—at a future conference.

Given the importance of prediction as a lawyering task, lessons about communicating predictions could also be a part of the first-year legal writing curriculum. Such a conversation could naturally fit into a broader discussion about client letters or about brief answers or conclusions in memoranda, where probability expressions are likely to appear.²²¹ The conversation could include a range of issues from practical writing guidance to students’ ethical and professional identities as lawyers, including:

- The practical and ethical importance of accurately assessing and communicating uncertainties about potential legal outcomes²²²
- The various sources of uncertainty in predictive legal analysis²²³
- Different ways of communicating predictive analysis—including the advantages and disadvantages of quantitative and qualitative probability expressions²²⁴
- How clients’ needs, expectations, and backgrounds might affect their ability to understand legal advice and how students’ choices in “tone and style” affect how their writing is received by clients²²⁵
- The selection of an appropriate level of certainty as an exercise of professional judgment²²⁶

219 See Terrill Pollman & Judith M. Stinson, *IRLAFARC! Surveying the Language of Legal Writing*, 56 ME. L. REV. 239, 240 (2004); *id.* at 269 (“For those whose professional life is devoted to teaching communication skills, it is well worth the effort needed to develop and support a shared language.”).

220 IPCC GUIDANCE NOTE, *supra* note 80, at Annex A-1.

221 See Turner, *supra* note 13, at 3.

222 See *supra* notes 1–11 and 64–67 and accompanying text.

223 See *supra* notes 13–19 and accompanying text.

224 See generally *supra* sections 2.1–2.3.

225 Turner, *supra* note 13, at 3.

226 *Id.* at 7 (“Just how definitive a lawyer should be with a brief answer in professional work depends on many factors Making those judgments in the real world will be part of students’ lives as professional attorneys.”).

Because of the demands of the typical first-year curriculum, there likely won't be sufficient time to delve deeply into each of these topics.²²⁷ And we shouldn't "expect students to master the intricacies of brief answer qualifiers and their real-world impacts in a first-year legal research and writing course. Still, asking students to think more deeply about their [predictions] promotes the higher-level thinking we hope students develop."²²⁸ And given the critical role that prediction plays for lawyers, that kind of deliberation is precisely what we should be asking of both current—and future—lawyers.

V. Conclusion

Lawyers must be careful to ensure the language used to communicate legal analysis accurately reflects their best, reasoned judgment. This includes the vital, last link in the chain: the probability expressions that lawyers use when making predictions about legal outcomes. Lawyers need to take this issue seriously, given the high potential for miscommunication. This article has attempted to define common legal verbal probabilities in an effort to reduce ambiguity. But further discussion and research are needed to ensure that we, as lawyers, are using language that best allows our clients to make fully informed decisions about legal matters. Hopefully, this article is merely the first step in encouraging both scholars and practitioners to be more deliberate in considering the issues of communicating uncertainty in legal writing.

²²⁷ Caroline L. Osborne, *The State of Legal Research Education: A Survey of First-Year Legal Research Programs, or "Why Johnny and Jane Cannot Research,"* 108 L. LIB. J. 403, 409 (2016) (noting that basic first-year legal writing courses are "already crowded for time and must teach a multiplicity of basic skills").

²²⁸ Turner, *supra* note 13, at 3.