

Legal Analytics for Risk Assessment and Informed Decision-Making

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The practice of law centrally involves the practice of decision-making. Between the moment a lawyer decides to take on a case and the moment when a judge makes a final ruling, hundreds or thousands of macro and micro-decisions are made regarding case strategy, argumentation, and planning. Some of these decision-making moments are obvious: *Should I take on this case? Should I settle or go to trial?* Some are less obvious, and in these instances, it isn't always clear to the decision-maker that a decision has been made. For instance, *when do I know that I have enough research? What language am I going to use to deliver a particular message to my client?*

A 2016 paper by Heather Heavin and Michaela Keet compellingly argues that one of the major functions of a lawyer is to be a “predictor” (1). The paper, entitled *The Path of Lawyers: Enhancing Predictive Ability through Risk Assessment Methods*, challenges the popular perception that risk assessment is the domain of finance or engineering and not the law. They suggest that while the terminology “risk assessment” or “risk identification” isn't often used by lawyers, that risk assessment functions are actually being performed under the more nebulous guises of “intuition” and “experience” (1).

Our paper will examine how legal analytics can assist lawyers in their roles as “predictors”. We will discuss the ways in which legal analytics can make moments of decision-making more obvious, as well as mitigate the kinds of cognitive biases that impact decision-making -- especially in situations where the potential outcomes of a decision are particularly high stakes. We will also demonstrate how legal analytics is levelling the playing field for smaller firms by providing access to the kind of in-depth case research that was previously limited to Big Law firms with a large research spend.

Legal analytics and risk assessment

Heavin and Keet argue that it is important to be more clear and transparent about the fact that legal decision-making involves risk assessment, writing, *“So while there has been a perception that lawyers “do nothing” when it comes to risk assessment, this perception is – at best – inaccurate and – at worst – undermines the critical role lawyers play and should play in resolving problems for clients.”* (1-

2). Some aspects of litigation are more easily identifiable as risk assessment than others. One extremely common “risk management” aspect of litigating a case involves providing a legal opinion to a client regarding whether they should settle or continue with litigation. Often, this opinion is frequently updated and reassessed throughout the course of litigation as new information arises. Ideally, this process ensures that a client does not proceed into litigation blindly believing that they are guaranteed a particular outcome.

However, during the course of litigation, clients heavily depend on their lawyers to perform a great deal of decision-making for them that isn’t limited to big picture decisions like settlement. The choice to outsource this decision-making is predicated on the belief that lawyers are better equipped than a layperson to make legal decisions due to their experience and specialized knowledge of the law.

In recent years, the legal technology marketplace has seen the introduction of a number of legal analytics tools that aim to assist with many aspects of litigation risk management. Many of these tools take the approach of data mining and analyzing a body of published case law, making an exhaustive and complete review of applicable case law possible without being cost prohibitive.

Throughout this paper, we will discuss how complementing current legal research techniques with an empirical, analytics-based, quantitative approach can improve legal decision-making by using data to address cognitive biases. We will interject at times with case studies in order to demonstrate potential real-world applications of these techniques. All of the numbers supplied in the case studies are based on actual case law, where the dataset is the set of published decisions for the court in question. These numbers have been run using Loom Analytics¹, an interactive Canadian legal analytics tool. For those who wish to replicate the research or extrapolate further, these numbers can be reproduced by anyone using the Loom Analytics system. They can also be reproduced by anyone who wishes to run a more comprehensive and manual review of the body of published Canadian case law.

¹ Loom Analytics can be accessed at www.loomanalytics.com

There are some limitations in the data that are important to highlight at the outset of this paper. The dataset is approximately 92% complete with some limited exclusions. Due to current technical limitations, decisions that include multiple proceedings and multiple judges at the Ontario Superior Court of Justice are not represented in the dataset. Loom Analytics is currently in the process of addressing these technical limitations, with a projected timeline for their inclusion by December, 2016. Decisions published in French have also been excluded.

Moving from vague approximations to precision

Risk assessment is primarily the exercise of making judgments about probability. The trouble is that making accurate judgments about probability is an extraordinarily difficult task, and many people dramatically overestimate the accuracy of their judgments. This is especially true in an area such as the law where, in the past, quantitative metrics generally haven't been available to aid in decision-making. Heavin and Keet identify a tendency for lawyers to frequently hedge their bets by using *“vague or slightly ambiguous language to describe chances of winning or defeating a claim (such as “more likely than not” or “most likely” or “unlikely”)* rather than providing percentages or scales of predictions, [so] there may be less ability for the client to complain if the result turns out badly” (3). This tendency may be driven in large part by an inability to back up these probabilistic claims with quantitative research.

Using legal analytics tools and other quantitative research methods, lawyers can more easily provide clients with an overview of how their case compares to other, similar cases that have been heard in the past. This is especially crucial when dealing with “one-shot litigants” who “tend to overestimate their chances of success at litigation” (Heavin and Keet, 18). Particularly in cases where there is a clear trend that cases with matching profiles have low rates of litigation success, using numbers to supplement legal experience can help set reasonable expectations, ideally ensuring a case will be brought to closure while achieving the client's best interest.

As an example, a lawyer might be worried, consciously or subconsciously, about suggesting settlement in certain suitable cases for fear of clients questioning whether it is the lawyer's lack of

confidence or competence in appearing at trial that is the real reason behind the opinion (Heavin and Keet, 3). But if settlement is in fact the smarter choice, clear numerical evidence allows lawyers to provide precise numbers to back up the opinion, mitigating the perception that the lawyer is shying away from a trial.

Beyond personal experience

Heavin and Keet outline a number of cognitive distortions that impact legal decision-making. One of these is “availability”: “When an event is readily recallable or easily comes to mind, people will often overestimate the risk of it occurring, merely because it is readily available to be brought to mind.” (4). When advising a client on the best course of action, the course that seems most obvious is usually that which is top of mind, based on personal experience or discussion with colleagues. But while extrapolating solely from personal experience can lead to erroneous judgment, supplementing personal experience with big-picture metrics that examine the larger context can help mitigate this availability bias.

Planning a defense and evaluating unfavourable case precedent

Analytics can provide an economical way to do comprehensive legal research and plan for a defense while also planning for an offense. Few, if any, litigants come equipped with a bottomless budget. This puts a constraint on the amount of time and resources that can be dedicated to research. As such, pre-litigation and litigation research primarily revolves around building up the strengths of the client’s case. Case law research often focuses on the close reading of a few, usually frequently cited, case precedents that seem to reflect favourably on the litigation at hand. This can lead to overlooking other potentially relevant precedent that has received little to no attention in broader legal commentary.

Confirmation bias, wherein people tend to ascribe more value to arguments or research that is favourable to them or agrees with their pre-existing beliefs, can also play a role here. The corollary, where research that seems unfavourable is undervalued, can leave counsel exposed to surprises during litigation -- and in the worst case scenario, at trial. An analytics-driven approach can help mitigate confirmation

bias by providing a more complete picture of the larger landscape by supplying all relevant cases, whether they are favourable or not. Lawyers who are more aware of case precedent that may be detrimental can then weight it properly and try to ensure that it receives the correct amount of attention during the research and case preparation process.

Case Study 1 - Planning for an offense and defense

	Trials							Motions						
	Win		Loss		Other		Total	Win		Loss		Other		Total
	N	%	N	%	N	%		N	%	N	%	N	%	
Moving Party	147	40.7	156	43.2	58	16.1	361	1661	51.6	1029	32.0	526	16.4	3216
Responding Party	155	42.8	150	41.4	57	15.7	362	1023	30.6	1610	48.2	709	21.2	3342

Ontario Superior Court of Justice - 2015 to Present - Civil Decisions - Generated by Loom Analytics

The above chart provides a numerical breakdown of trial and motion outcomes for the moving and responding parties in trial and motion decisions. Knowing how well the opposition has fared in the past, and being able to review precedent where the opposition has won in similar situations provides information that can be used to anticipate and counter the strategy of opposing counsel.

Litigants aren’t rational decision makers

Several studies discussed in the Heavin and Keet paper² suggest that both Plaintiffs and Defendants make significant errors in judgment when trying to predict trial outcomes. Gross and Syverud conducted two studies, the first looking at cases during a one-year period between 1985 and 1986. This study found that Plaintiffs made predictive errors in 61% of the 529 cases that were reviewed, while Defendants made prediction errors in 24% of the cases (Heavin and Keet, 4-5). The second study, which reviewed cases from 1990 and 1991 returned fairly consistent results, showing a 65% error rate for Plaintiffs and a 26% error rate for Defendants (Heavin and Keet, 5).

Later studies found very similar error rates, and unlike the Gross and Syverud studies, these later publications also measured the economic impact of predictive errors. A study conducted by Jeffrey Rachlinski, which was published in 1996, found that the average error cost to Plaintiffs was \$27,687 and

² Heavin and Keet paper ‘The Path of Lawyers’ at page 5, 6

the average error cost to Defendants was \$354,900 (Heavin and Keet, 5). A decade later, a study conducted by Randall Kiser et. al. and published in 2008 specifically examined the cost of economic loss related to the rejection of a settlement offer, and saw average error costs of \$43,100 for Plaintiffs and \$1,140,900 for Defendants (Heavin and Keet, 5).

It is very interesting to note that in the studies that addressed financial impact, even though Plaintiffs predicted incorrectly at a much higher rate than Defendants, the financial implications for Defendants were significantly higher than for Plaintiffs. It is also quite likely that the financial impact of predictive errors has only increased in the years since the publication of these studies.

The results of these studies suggest that litigants are not making the rational decisions that an outside observer might expect. Intuitively, it should be true that as decision-makers become more informed and gather more data about their decisions, their confidence in the accuracy of their judgments should increase. However, in the section of their paper that addresses decision-making biases, Heavin and Keet argue that confidence is actually inversely proportional to the amount of information one has about a decision: *“People are more confident about their judgments when they have little or no information to support them. They are also overly optimistic about the strength of their own judgments and believe they are more deserving than other people”* (10).

When it comes to financial impact and decision-making, Heavin and Keet also note that *“People are significantly more averse to losses than they are pleased to receive what is perceived as an equivalent gain”* (10). Here, they also quote Cass Sunstein, who writes in Behavioral Analysis of Law, that *“contrary to economic theory, people do not treat out-of-pocket costs and opportunity costs as if they were equivalent.”* (Heavin and Keet, 10). In situations where litigants perceive that they have suffered a loss because their rights or entitlements have been violated, they may be more likely to pursue litigation aggressively, regardless of whether or not this choice is a rational decision likely to lead to a positive outcome.

By providing supporting information for decision-making, analytics can help mitigate the false overconfidence that leads to predictive errors. Metrics can provide a “reality check” that will avoid disappointment down the line if a litigation outcome does not match up with initial expectations.

Case Study 2 - Litigants’ Reality Check

	Win		Loss		Other		Total
	N	%	N	%	N	%	
Plaintiff	125	45.6	103	37.6	46	16.8	274
Defendant	103	37.3	129	46.7	44	15.9	276
Ontario Superior Court of Justice - 2015 to Present - Civil Trial Decisions - Generated by Loom Analytics							

The above chart shows the trial outcomes for Plaintiffs compared with Defendants. There is a clear difference in the results. Similar data can be used when speaking to clients about expectations at trial.

Making research more efficient and informed

Daniel Kahneman’s book, *Thinking, Fast and Slow*³ proposes a model that differentiates between two modes of thinking that affect decision-making: System 1 (intuitive, fast-paced thinking) and System 2 (cognitive, concentrated, slower thinking). Kahneman writes, “*When all goes smoothly, which is most of the time, System 2 adopts the suggestions of System 1 with little or no modification. You generally believe your impressions and act on your desires, and this is fine -- usually*” (26).

The financial implications of the predictive errors discussed above are an example of the unusual, high-stakes situations where simply believing impressions and acting on desires is not sufficient. So why, when large sums of money and significant legal consequences are at stake, do both litigants and lawyers continue to rely heavily on the intuition and gut instinct that originate in System 1?

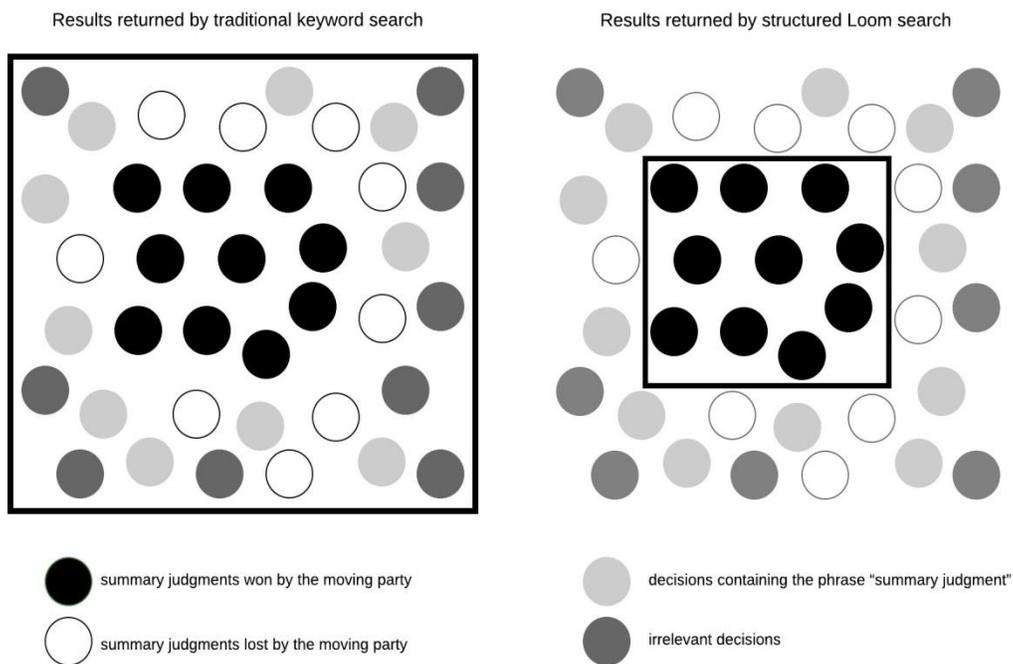
One possible reason is that slow and considered System 2 thinking is extremely resource-intensive and leads to what Kahneman describes as “cognitive strain” (61). In law, we can think of legal

³ Daniel Kahneman’s book, *Thinking, Fast and Slow*, provides the following definitions of the two systems: “System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control. System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration” (22).

opinions that leverage System 1 thinking as ones based on gut instinct and immediate personal experience, while those that leverage System 2 thinking are based on difficult, comprehensive, and time-consuming legal research. In most cases, given resource limitations, intensive System 2 thinking becomes cost-prohibitive if engaged at every stage of the litigation process.

Legal analytics tools can help break down some of the barriers which may cause people to avoid legal research tasks they believe will lead to cognitive strain. Similar to the familiar “write once, run anywhere” (WORA) model of software development, the companies creating legal analytics tools spend their resources upfront to do extensive case law analysis so that the same research does not need to be performed over and over by individual lawyers. Because of their speed and efficiency at delivering comprehensive legal research, legal analytics systems can make System 2 thinking more palatable.

Case Study 3 - Providing focused results



The above graphic is a visualization of a search for decisions that include summary judgments won by a moving party. The visualization shows results that may be returned by a traditional, open-text legal research tool in comparison with results returned by a structured search. A structured search can cut down on the amount of time assessing whether or not a written decision is actually relevant to the research being conducted.

Accurately assessing case timelines

Plaintiffs, as well as the moving parties in motions, are very rarely cognizant of the length of time it takes for the wheels of justice to turn. Knowing the average turnaround times for motions and trials can help temper client impatience. Especially for Plaintiffs who are facing economic loss, knowing how long it has taken for similar judgments to be published in the past will allow them to plan accordingly, and perhaps may even impact their choices when it comes to settling or going all the way to trial.

In contingency fee cases, where lawyers carry the burden of risk for upfront financial costs involved with litigation, knowledge of decision response times also can allow lawyers to plan their finances effectively.

Case Study 4 - Planning for judgment delays

Judge	Average Decision Publication Time (days)	Number of Decisions
Grace, Andrew Duncan	80.26	20
McEwen, Thomas John	96.12	17
Stinson, David Gooderham	98.62	21
Brown, Carole Jean	102.82	22
Edwards, Mark L.J.	126.94	18
Ontario Superior Court of Justice - 2010 to Present - Civil Trial Decisions - Judges with at least 15 trial decisions - Generated by Loom Analytics		

The above chart illustrates average trial decision publication times for particular judges. Such timelines are useful in case management activities and can also be used to keep clients proactively informed about potential delays in the litigation process.

Leveraging Jurisdiction Planning

Many lawyers believe that it takes longer to schedule motions or trials in some jurisdictions, or that the outcomes are more favorable in some jurisdictions in comparison to others. Quite often this is based on personal experience or anecdotal discussions in legal circles. Metrics provided by analytics systems can readily confirm or debunk these beliefs very quickly. If in fact there are trends that are

readily visible and can be leveraged, counsel then have the opportunity to try to strategize in order to secure the most favorable circumstances for their clients.

Case Study 5 - Jurisdiction planning

	Win		Loss		Other		Total
	N	%	N	%	N	%	
Ontario	28	73.7	8	21.1	2	5.3	38
British Columbia	8	50.0	7	43.8	1	6.3	16

Ontario Superior Court of Justice, Supreme Court of British Columbia - 2015 to Present - Civil Motion to Certify Class Decisions - Generated by Loom Analytics

The above chart illustrates the jurisdictional difference in outcomes for class certification motions between Ontario and British Columbia.

Levelling the playing field

While large law firms may have greater financial resources to devote to legal research than solo or small firms, access to published case law is available regardless of firm size. While some might consider pay-walled content to be cost prohibitive, it has not been totally out of reach for smaller firms, especially in recent years. However, cost considerations have meant that small firms can't leverage research resources in the same way that a large firm with access to a floor of associates and law students is able to.

Analytics tools provide a more streamlined research approach, making comprehensive research accessible in a way it has never been before. Instead of needing several staff to engage in an open-ended search to find case precedent, analytics turns the traditional research process on its head by providing matching precedent up front using efficient reporting tools. Lawyers can then spend their time interpreting the precedent to build a solid case for their client.

Accounting for judicial trends

There are many, many factors that impact the outcome for a case in litigation, and in addition to the more obvious factors such as the facts and issues involved, the "human factor" is a permanent variable

in each step of litigation. In many legal matters, the knowledge of which judge is assigned to preside over a trial or hear a motion is frequently not available until a day or two before an appearance in court. In these situations, being able to quickly review past decisions published by a Master or Judge can provide insight into past patterns of judicial decision-making.

Concerns regarding analytics-driven decision-making: a cautionary note

Although we argue in this paper that using metrics can help mitigate cognitive biases in decision-making, metrics also come with their own cognitive biases, such as the tendency to overvalue significance or to ascribe more weight to a number than is reasonable. There is also the tendency to mistake a historical trend for a probability calculation. The most effective use of legal analytics may require some basic familiarity with probability and statistics, as well as the ability to self-monitor for the particular cognitive distortions related to the interpretation of numerical values.

Selecting analytics tools

There are several products in the Canadian legal technology marketplace that either provide analytics tools, or leverage the power of analytics to provide applications of it. These include Loom Analytics, Rangefindr, a sentencing range tool, and Blue J Legal, a tax law tool. Products in the American market include Lex Machina, Ravel Law, and most recently, Bloomberg Law's Litigation Analytics. These tools vary from being purely descriptive analytics to being predictive in nature by leveraging statistical algorithms.

When selecting what works best for their practice, we suggest that lawyers consider the following when evaluating different analytics tools:

- First and foremost, what does the tool actually do? What kinds of numbers or information does it provide?
- What data set is the tool mining in order to arrive at its answers?
- What processes is the tool using to extract its data?

- Is the tool providing metrics based exclusively on historical parameters, or is it extrapolating using predictive algorithms?
- How does the tool arrive at its answers? If the tool is providing a probabilistic outcome, what kinds of calculations are being performed? If the tool is answering a natural language question, what sources is it using?
- Is the process transparent or is the tool basically a “machine learning” black box?

Looking Forward

We began this paper by asserting that the practice of decision-making is central to the practice of law. At the risk of stretching the metaphor, we would like to end by discussing what it means to “practice” decision-making.

In 1993, a seminal research paper entitled *The Role of Deliberate Practice in the Acquisition of Expert Performance* was published in the *Psychological Review* by Ericsson, Krampe, and Tesch-Römer. The ground-breaking argument made in the paper was that it is not talent that largely or primarily determines expert-level performance. Instead, Ericsson et. al. write, “*We agree that expert performance is qualitatively different from normal performance and even that expert performers have characteristics and abilities that are qualitatively different from or at least outside the range of those of normal adults. However, we deny that these differences are immutable, that is, due to innate talent... Instead, we argue that the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain.*” (400).

Following this argument, we suggest that the achievement of expert-level decision-making in the legal sphere requires deliberate practice. Accordingly, in order to engage in deliberate practice, one must be mindful of situations where decision-making is taking place and what factors are influencing decisions. This requires the ability to identify decision-making moments, identify what key pieces of information are the most relevant, and identify what cognitive biases might be having a distorting impact on the thought processes related to decision-making.

We believe that the integration of legal analytics into legal research provides one avenue for formalizing a decision-making practice. The act of simply engaging in a quantitative analysis can make it more apparent during a research process that decisions are being made. An empirical approach to research can also help control for cognitive biases, such as instances where weak anecdotal data based on personal experience is the driving factor in decision-making.

The field of legal analytics is quite new, and while there are certainly significant improvements that can and hopefully will be made with better access to legal data in the future, the advantages of an analytics-driven approach are significant even at this early stage.

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