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TIMING AND DISPOSITION OF DAUBERT MOTIONS IN FEDERAL DISTRICT COURTS: AN EMPIRICAL EXAMINATION

OCTOBER 2015

GEORGE MASON UNIVERSITY SCHOOL OF LAW

LAW & ECONOMICS CENTER

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TIMING AND DISPOSITION OF DAUBERT MOTIONS IN FEDERAL DISTRICT COURTS: AN EMPIRICAL EXAMINATION

James C. Cooper

October 2015

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EXECUTIVE SUMMARY

In 1993, the Supreme Court established a new standard for the admissibility of expert evidence with its decision in *Daubert v. Merrell Dow Pharmaceuticals*.[1] *Daubert*, along with *Gen. Electric Co. v. Joiner*[2] and *Kumho Tires Co. v. Carmichael*,[3] provided an interpretation of Federal Rule of Evidence 702 that replaced the "general acceptance" standard under *Frye v. United States*,[4] with one that focuses on methodological rigor.

Given the widespread use of expert testimony in civil litigation, the judicial handling of *Daubert* motions is likely to have important implications for litigation. For example, to the extent that parties rely on the outcome of *Daubert* motions for important information about their relative likelihood of prevailing in litigation, delay in ruling on *Daubert* motions may unnecessarily prolong litigation. Although several studies have examined the impact of *Daubert* on expert testimony, there is no evidence on what factors influence the time it takes courts to rule on *Daubert* motions, or how the timing and outcome of *Daubert* motions may influence litigation outcomes and the likelihood of settlement.

To fill this gap, this Report examines a sample of 2,127 *Daubert* motions made in 1,017 private cases from 91 federal district courts. The sample spans from 2003-2014, and involves 57 different causes of action. This large and diverse sample allows a comprehensive overview *Daubert* practice in federal courts. It also allows for the testing of the hypothesis that by providing parties more information about the likely success of a plaintiff's case, *Daubert* rulings can spur early termination of litigation. Litigation theory predicts that divergent expectations about the likely outcome of a case can prevent settlement.[5] Because *Daubert* rulings reveal information about the likely success of a plaintiff's case, they can serve as inflection points for settlement.[6] Further, *Daubert* rulings that eliminate or greatly retard a plaintiff's ability to mount a case—for example, by striking the testimony of a medical expert in a medical malpractice case—may lead to summary adjudication. Accordingly, if courts are not timely in their *Daubert* rulings, they may needlessly prolong litigation.

Among the major findings of this Report are the following:

- Over the entire sample, 47 percent of *Daubert* motions result in some sort of limitation on expert testimony. Courts completely strike expert testimony in only 23 percent of the motions in the sample.

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1   509 U.S. 579 (1993).
2   522 U.S 136 (1997).
3   526 U.S. 137 (1999).
4   293 F. 1013 (D.C. Cir. 1923). *See* BERTSEIN, *The Misbegotten Judicial Resistance to the* Daubert *Revolution*, 89 NOTRE DAME L. REV. 27, 39-41 (2013) (explaining the pre-Daubert conflict within the federal courts on the admission of expert testimony); Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the* Daubert *Decision*, 8 PSYCHOL PUB.POL'Y & L. 251, 252-53 (2002) (same). NOTRE DAME
5   *See* STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 401-07 (2004). .
6   *See* Flores et al., *supra* note 6, at 32 (quoting a South Carolina attorney who notes that *Daubert* rulings "play an important role in helping the parties evaluate their relative positions in the case and help parties understand the case in a way that helps them resolve it.").

- Defendants are more likely than plaintiffs to have at least a portion of their *Daubert* motion granted (.50 vs. .40), and this directional pattern holds true across almost all causes of action.

- Courts take an average of 84 days to rule on *Daubert* motions, and the median duration of a *Daubert* motion is 51 days. This distribution varies widely by court and by cause of action, but these measures do not appear to vary over the time.

- Survival analysis shows that courts resolve 70 percent of all *Daubert* motions within 100 days of the closing of *Daubert* briefing. Motions are resolved more quickly for intellectual property cases.

- *Daubert* motions filed before summary judgment rulings pend longer than those filed at other times, likely because courts wait to rule on both *Daubert* and summary judgment motions at the same time.

- For plaintiffs, unsuccessful *Daubert* motions are associated with a one-third lower win-rate in subsequent litigation than successful motions. There is no statistically measurable association between the outcome of defendants' *Daubert* motions and subsequent litigation outcomes.

- Consistent with theory (and anecdotal evidence from earlier studies), survival analysis suggests that longer pendency times for *Daubert* motions are associated with lower rates of settlement.

- The negative relationship between the length of time a *Daubert* motion pends before the court and the rate of settlement appears to be stronger for tort, employment, and copyright claims.

Given the costs associated with prolonged litigation,[7] the strong positive association between *Daubert* rulings and early case termination indicates that courts should avoid unreasonable delay in ruling on *Daubert* motions. Similarly, the strong negative relationship between settlement rates and the number of *Daubert* motions suggests that courts should use their Rule 16 powers to limit the use of expert testimony when practical and when

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7   Prolonged litigation can lead to costs associated with unnecessary discovery and preservation. *See* Searle Center on Law, Regulation, and Economic Growth, *Litigation Cost Survey of Major Companies* (May 2010) (surveying fortune 200 companies and finding average discovery cost per case to range from $621,880-$2,993,567); Rand Institute for Civil Justice, Where the Money Goes: Understanding Litigant Expenditures for Producing Electronic Discovery (median production costs ranging of $1.8 million); William H.J. Hubbard, *Preservation Costs Survey: Final Report* (Feb. 18, 2014) (estimating a range of preservation costs of $12,000 per year for small companies and $38 million per year for the largest companies).

it would not prejudice either party. Finally, the results indicate that courts might reduce the cost of litigation if they were to adopt "*Lone Pine*"-type procedures that structure expert discovery and concomitant *Daubert* motions early, especially when expert testimony is required to prove certain elements of a claim.[8]

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[8]   *See Lore v. Lone Pine Corp*., 1986 WL 637507 (N.J. Super. Ct., Nov. 18, 1986).

ACKNOWLEDGEMENTS

1. INTRODUCTION AND BACKGROUND

In 1993, the Supreme Court established a new standard for the admissibility of expert evidence with its decision in *Daubert v. Merrell Dow Pharmaceuticals*.[1] Before *Daubert*, expert testimony generally had been governed by the "general acceptance" standard announced by the Supreme Court in *Frye v. United States*.[2] *Daubert* changed that altering the focus from relevance and acceptance, to methodological rigor. When assessing expert testimony, courts now must also assure that only scientifically valid expert evidence reach the trier of fact. As codified by amendments to Federal Rule of Evidence 702, expert testimony is admitted only if it is based on "sufficient facts or data," and "the product of reliable principles and methods" that are "reliably applied . . . to the facts of the case."[3] Subsequent Supreme Court decisions in *Gen. Electric Co. v. Joiner*[4] and *Kumho Tires Co. v. Carmichael*,[5] make clear that the court is to act as the gatekeeper, and that the *Daubert* standard applies not only to scientific evidence, but to all expert testimony. As one notable *Daubert* scholar has explained:

> [I]n a very short period of time, expert evidence law in federal courts (and states following the federal lead) underwent revolutionary changes. As of the early 1980s, with few exceptions, any qualified expert was permitted to testify on any relevant subject. By 2000, even the most qualified experts need to prove that their testimony was based on reliable principles and methods, and those principles and methods were applied reliably to the facts of the case.[6]

Several studies have focused on how *Daubert* has impacted expert testimony by examining reported cases, dockets, or surveying judges and attorneys.[7] Although

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[1] 509 U.S. 579 (1993).

[2] 293 F. 1013 (D.C. Cir. 1923). *See* David E. Bernstein, *The Misbegotten Judicial Resistance to the* Daubert *Revolution*, 89 NOTRE DAME L. REV. 27, 39-41 (2013) (explaining the pre-*Daubert* conflict within the federal courts on the admission of expert testimony); Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the* Daubert *Decision*, 8 PSYCHOL. PUB. POL'Y & L. 251, 252-53 (2002) (same). Notre Dame

[3] FED. R. EVID. 702 (b)-(c).

[4] 522 U.S 136 (1997).

[5] 526 U.S. 137 (1999).

[6] Bernstein, *supra* note 2, at 50.

[7] *See*, *e.g.*, Eric Helland & Jonathan Klick, *Does Anyone Get Stopped at the Gate? An Empirical Assessment of the* Daubert *Trilogy in the States*, 20 S. CT. ECON. REV. 1 (2012) (examining a sample of litigated and settled state cases); Flores *et al.*, *Examining the Effects of the* Daubert *Trilogy on Expert Evidence Practices in Federal Civil Court: An Empirical Analysis*, 34 S. ILL. U. L.J. 533 (2010) (information from dockets and interviews); Flores *et al.*, EFFECTS OF *DAUBERT* ON EXPERT EVIDENCE PRACTICES IN FEDERAL DISTRICT COURT OF SOUTH CAROLINA, THE GRANT SAWYER CENTER FOR JUSTICE STUDIES (2008) (same), *at* http://www.defendingscience.org/sites/default/files/upload/SKAPP-PROJECT-FINAL-REPORT-3-18-08.pdf; Edward Cheng & Albert Yoon, *Does* Frye *or* Daubert *Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471 (2005) (database of removal motions from federal and state dockets); NICOLE L. WATERS & JESSICA P. HODGE, NAT'L CTR. FOR

whether *Daubert* actually has increased the reliability of expert evidence remains an open question, these studies generally suggest that *Daubert* has increased the judicial role in expert testimony as the number of challenges has increased.[8] Given the widespread use of expert testimony in litigation[9] and the steep cost of discovery,[10] the judicial handling of *Daubert* motions is likely to have important policy implications. For example, to the extent that parties rely on the outcome of *Daubert* motions for important information about their relative likelihood of prevailing in litigation, delay in ruling on *Daubert* motions may unnecessarily prolong litigation, imposing a cost on society.

This Report contributes to this body of research in two important ways. First, it employs a substantially larger and more diverse sample than prior work: a sample of 2,127 *Daubert* motions made in 1,017 private cases from 91 federal district courts, which spans from 2003-2014 and involves 57 different causes of action. This large and diverse sample provides the most comprehensive view of *Daubert* practice in federal civil litigation to date,[11] allowing the examination of patterns and trends across a broad variety of dimensions.

Second, this unique data set allows the examination of the following question: Can *Daubert* rulings spur early termination of cases by providing parties information about the likely success of a plaintiff's case? Litigation theory predicts that divergent expectations about the likely outcome of a case can prevent settlement.[12] Because *Daubert* rulings reveal information about the likely success of a plaintiff's case, they can serve as inflection points for settlement.[13] Further, *Daubert* rulings that eliminate or greatly retard a plaintiff's ability to mount a case—for example, by striking the testimony of a medical expert in a medical malpractice case—may lead to summary adjudication.[14] Accordingly, if courts are not timely in their *Daubert* rulings, they may needlessly prolong litigation.

STATE COURTS, THE EFFECTS OF THE *DAUBERT* TRILOGY IN DELAWARE SUPERIOR COURT (2005) (information from dockets and interviews); Carol Krafka *et al.*, *Judge and Attorney Experience, Practices, and Concerns Regarding Expert Testimony in Federal Civil Trials*, 8 PSYCHOL. PUB. POL'Y & L 309 (2002) (survey of judges and attorneys); Jennifer L. Groscup *et al.*, *The Effects of* Daubert *on the Admissibility of Expert Testimony in State and Federal Criminal Cases*, 8 PSYCHOL. PUB. POL'Y & L. 339 (2002) (reported federal cases); Dixon & Gill, *supra* note 2 (reported federal cases); Sophia I. Gatowski et al., *Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post*-Daubert *World*, 25 L. & HUMAN BEHAVIOR 433 (2001) (survey of judges).

[8] *See* Krafka *et al.*,*supra* note 7, at 2.
[9] *See* Cheng & Yoon, *supra* note 7 at 482.
[10] *See* Searle Center on Law, Regulation, and Economic Growth, *Litigation Cost Survey of Major Companies* (May 2010) (surveying fortune 200 companies and finding average discovery cost per case to range from $621,880-$2,993,567).
[11] For example, Waters & Hodge examine 57 cases from Delaware Superior Court, and Flores *et al.* (2008 & 2010) examine 191 cases from the U.S. District for South Carolina.
[12] *See* STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 401-07 (2004).
[13] *See* Flores *et al.* (2008)*, supra* note 7, at 32 (quoting a South Carolina attorney who notes that *Daubert* rulings "play an important role in helping the parties evaluate their relative positions in the case and help parties understand the case in a way that helps them resolve it.").
[14] *See* Cheng & Yoon, *supra* note 7, at 473.

The data show that courts take an average of 84 days to rule on *Daubert* motions, but this distribution varies widely by court and by cause of action. Courts resolve 70 percent of all *Daubert* motions within 100 days of the close of *Daubert* briefing. Consistent with theory (and anecdotal evidence from earlier studies), results from a Cox proportional hazards models suggests that the longer a court takes to rule on *Daubert* motions, the lower the likelihood that a case will terminate early in either summary judgment or settlement. The settlement rate is more than ten percentage points higher at the 10th percentile of *Daubert* pendency time (one week) compared to the median time (51 days). The positive relationship between the length of time a *Daubert* motion pends and the duration of litigation appears to be stronger for certain tort and civil rights claims, as well as copyright claims.

The association between *Daubert* rulings and case termination suggests that courts might reduce litigation costs—such as those associated with discovery or preservation—if they were to avoid unnecessary delay in ruling on *Daubert* motions.[15] One possible approach would be to adopt "*Lone Pine*"-type procedures that structure expert discovery and concomitant *Daubert* motions early, especially for cases that require expert testimony to prove certain claim elements.[16]

The remainder of this Report is organized as follows. Section 2 describes the sample collection procedure and provides summary statistics. Section 3 presents the main empirical findings on *Daubert* motions and rulings, and the association between *Daubert* outcomes and litigation outcomes. Section 4 discusses possible judicial actions, including utilizing *Lone Pine*-type procedures in *Daubert* practice, and Section 5 concludes.

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[15] *See* Searle Center on Law, Regulation, and Economic Growth, *Litigation Cost Survey of Major Companies* (May 2010) (surveying fortune 200 companies and finding average discovery cost per case to range from $621,880-$2,993,567); RAND INSTITUTE FOR CIVIL JUSTICE, WHERE THE MONY GOES: UNDERSTANDING LITIGANT EXPENDITURES FOR PRODUCING ELECTRONIC DISCOVERY (median production costs ranging of $1.8 million); William H.J. Hubbard, *Preservation Costs Survey: Final Report* (Feb. 18, 2014) (estimating a range of preservation costs of $12,000 per year for small companies and $38 million per year for the largest companies). *But see* Emery G. Lee, III & Thomas E. Willging,Federal Judicial Center, *National Case-Based Civil Rules Survey, Preliminary Report to the Advisory Committee on Civil Rules* (2009) (survey suggesting that in the majority of cases, the discovery process was not unduly costly or burdensome).

[16] *See Lore v. Lone Pine Corp.*, 1986 WL 637507 (N.J. Super. Ct., Nov. 18, 1986).

2. SAMPLE OVERVIEW

2.1 Sample Construction

To examine the *Daubert* process in detail, including the association between Daubert rulings and ultimate litigation outcomes, a random sample of private civil federal district court cases involving *Daubert* motions was collected for the years 2003-2014.[17] The first step in this process was to find a sample of cases in which the court entertained a *Daubert* motion by using a broad search of federal district court dockets in the Lexis-Nexis *Daubert* tracker database. The cases returned from this search were then examined to assure that they did not concern Rule 702 technicalities, such as failure to timely provide the identity of an expert or to make adequate disclosures. Those that did were excluded, as the main interest of this research project is the judicial treatment of motions that require an evaluation of expert testimony under the *Daubert* standard. Cases that settled prior to the judge ruling on a *Daubert* motion also were excluded from the sample, again because the focus of this study was on the outcomes of *Daubert* motions, and their impact on subsequent litigation. Prisoner petitions were also excluded given their unique nature. After this process, 1,017 cases remained in the final sample.

2.2 Summary of Sample Cases

Table 1 provides some summary statistics for the cases in the sample. Most cases in the sample were resolved by settlement (62.1%), with the remainder of resolutions being nearly evenly split between summary judgment and trial. Plaintiffs win 31.9 percent of cases that are not settled: 46.7 percent of the cases that go to trial, and only 16 percent of those cases decided at summary judgment. The sampled cases last an average of 1,005 days, and in almost all (87.9%), the plaintiff requested a jury trial. The average case length for those ending in trial is 1,069 days, compared with an average of 990 days for both those ending settlement or summary judgment. Cases ending in summary judgment end about ten days sooner on average than those that settle (983 vs. 993). The cases come from 91 of the 94 U.S. federal district courts. A full list is provided in Appendix A.

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[17] The size was set to assure sufficient statistical power to detect relatively small average differences in metrics to be measured. The most heavily sampled years were 2006 and 2011-2013. Only a handful of cases came from 2003, 2004, or 2014.

TABLE 1
CASE SELECTION SUMMARY

Cases	1,017
Average Duration: Days from Filing to Termination	1,005
Percent Jury Demand	87.9%
Number of District Courts	91
Number of Judges	562
Resolution:	
Summary Judgment	17.9%
Trial	19.5%
Settle	62.5%
Plaintiff Win Rate: across all resolution types	32.1%
Summary Judgment	16.0%
Trial	46.7%

The sample includes 57 distinct causes of action, which were identified by examining the "nature of suit" codes on the docket. Figure 1 shows the number of cases in the sample grouped by the top-level nature of suit codes. Torts are the most represented type of case, comprising 51 percent of the sample. Contract, civil rights, and intellectual property together comprise 36 percent of the sample. These relative frequencies are generally in line with general federal caseload volumes, although tort cases are over-represented.[18]

Figure 1
Cases by Nature of Suit

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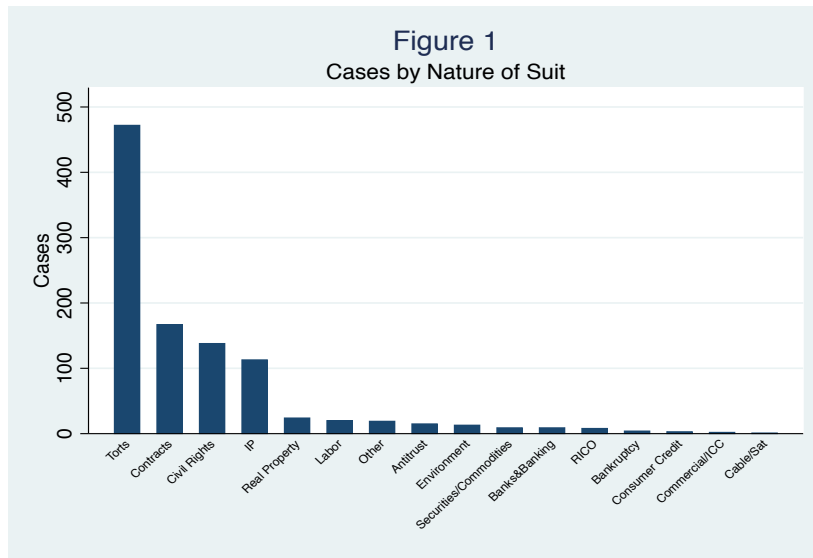
[18] According to recent federal district court caseload data, torts comprise 29.5% of private civil cases. Contracts, IP, and civil rights comprise 13.4%, 6.8%, and 19.1%, respectively. This discrepancy can be explained, however, due to the fact that sampling was intended to find cases that had *Daubert* motions, which will tend to skew the selection toward cases that are most likely to involve expert testimony rather than a truly random sample of case types across federal district courts. For example, tort actions like medical malpractice or products liability essentially require expert testimony to prove elements of the case.

2.3   Summary of Sample *Daubert* Motions

From these cases, a total of 2,127 rulings involving a motion to exclude a particular expert's testimony on *Daubert* grounds were identified. 71 percent are made by defendants to exclude plaintiff experts, and 29 percent of the motions in the sample are by plaintiffs to exclude defendant experts. The number of *Daubert* rulings is greater than the number of cases because almost half (480) of the cases in the sample involve multiple *Daubert* motions. For example, a plaintiff may file *Daubert* motions against two of the defendant's experts, and the defendant may file a *Daubert* motion against one of the plaintiff's experts, causing there to be three separate motions for one case. There are an average of 2.1 motions per case.

Table 2 lists motions by expert type. Experts in the medical field, which include doctors, psychologists, psychiatrists, and experts in other fields of medicine—*e.g.*, pharmacology, toxicology, radiology—comprise the largest group in the sample (31%). Engineering, technical, and environmental science experts make up 24 percent of the sample, and accountants comprise ten percent of the sample. Legal, business, accident reconstruction, economic, police/law enforcement, vocational, and public administration experts round out the rest of the sample. Experts in social and behavioral sciences (*e.g.*, anthropology) are less than one percent of the sample. [19]

TABLE 2
TYPES OF EXPERTS

Expert Category	Frequency	Percentage
Medical	665	31.27%
Medical Doctor	*366*	*17.21%*
Medical Science*	*197*	*9.26%*
Psychologist/Psychiatrist	*102*	*4.80%*
Engineering/Technical/Environmental	502	23.60%
Accountant	221	10.39%
Legal	168	7.90%
Business	119	5.59%
Accident Reconstruction And Investigation	113	5.31%
Economist	102	4.80%
Police/Law Enforcement	58	2.73%
Vocational Expert	53	2.49%
Public Administration	42	1.97%
Social & Behavioral Sciences	19	0.89%
Other**	65	3.06%
	2,127	100.0%

Notes: *Medical Science contains individuals with the following expertise: pharmacology, toxicology, chemistry, forensic science, biology, nursing, biostatistics, radiology, medical devices, biochemistry, biotechnology, cancer research, cardiovascular disease, microbiology, molecular biology, nursing, pharmaceutical chemistry, and physiology. **Other included the following: admiralty/maritime, aviation, transportation, language/linguistics, art, athletics, bass fishing, communications, coroner, driving, drug trafficking, food & product safety, furniture valuation, hypnosis, labels & warnings, Muslim charities, nutrition, paints, philosophy, photography, radio personality, recreation, religion, security management, sports, studio television production, taekwondo, trucking.

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[19] These proportions are similar to those found by Krafka *et al.*, *supra* note 7.

Table 3 breaks down experts by the causes of action that comprise more than 90 percent of the sample: contracts, torts, civil rights, intellectual property (IP), real property, labor, and antitrust.   The relative ranking of expert use varies across cases. Because torts make up the largest part of the sample, it should not be surprising that for most categories of experts, most are found in torts claims. This is especially true for medical doctors and engineering/technical/environmental experts (285). There are a few exceptions: accountants and business experts are most prevalent in contracts; legal experts are most prevalent in IP; and police/law enforcement and public administration experts are most prevalent in civil rights. Although medical science experts are used predominantly in torts claims, psychologists/psychiatrists are also prevalent in civil rights cases. Not surprisingly, economists are the largest group of experts used in antitrust, and real property claims rely predominantly on engineering/technical/environmental experts.

TABLE 3
EXPERT TYPE BY NATURE OF SUIT

Expert Category	Contracts	Torts	Civil Rights	IP	Real Property	Labor	Antitrust
Medical	38	484	73	25	5	8	1
Medical Doctor	*28*	*285*	*37*	*7*	*0*	*2*	*1*
Medical Science*	*15*	*144*	*8*	*15*	*1*	*3*	*0*
Psychologist/Psychiatrist	*5*	*55*	*28*	*3*	*4*	*3*	*0*
Engineering/Technical/Environmental	84	285	21	44	23	3	6
Accountant	85	31	16	41	8	8	8
Legal	37	35	21	41	5	5	0
Business	34	25	9	20	9	2	3
Accident Reconstruction and Investigation	9	97	4	0	1	0	0
Economist	11	26	16	14	3	3	16
Police/Law Enforcement	5	19	32	0	1	0	0
Vocational Expert	4	30	9	3	1	2	0
Public Administration	3	8	25	1	2	2	0
Social & Behavioral Sciences	1	5	7	1	1	0	1
Other**	3	30	10	7	0	1	0
	324	1,087	243	197	59	34	35

Notes: *Medical Science contains individuals with the following expertise: pharmacology, toxicology, chemistry, forensic science, biology, nursing, biostatistics, radiology, medical devices, biochemistry, biotechnology, cancer research, cardiovascular disease, microbiology, molecular biology, nursing, pharmaceutical chemistry, and physiology.
**Other includes the following: admiralty/maritime, aviation, transportation, language/linguistics, art, athletics, bass fishing, communications, coroner, driving, drug trafficking, food & product safety, furniture valuation, hypnosis, labels & warnings, Muslim charities, nutrition, paints, philosophy, photography, radio personality, recreation, religion, security management, sports, studio television production, taekwondo, trucking. No expert category comprises more than 0.42% of the sample. Two types of expertise occurred with this frequency: admiralty/maritime and aviation.

3.   EMPIRICAL FINDINGS

The empirical analysis in this section is broken into three main parts. Section 3.1 examines *Daubert* outcomes and factors related to the length of time it takes courts to rule on *Daubert* motions. Section 3.2 focuses at the relationship between *Daubert* outcomes and subsequent litigation outcomes. Section 3.3 tests the hypothesis that delaying *Daubert* rulings impacts the rate at which cases terminate early through summary judgment or settlement.

3.1   *Daubert* Outcomes & Length of Motion Pendency

Table 5 examines plaintiff and defendant motion win rates by the nature of the suit.[20] A "full grant" is a ruling that provides the moving party all of the relief it requested in its motion, such as total exclusion of an expert's testimony. A "partial grant" is a ruling that provides the moving party some of its requested relief, such as exclusion of a portion of an expert's testimony or analysis. For both parties, a full grant is about half as common as a partial grant, and defendants are more likely to win their motions—either fully or partially—than plaintiffs (.25 & .50 vs. .18 & .40).[21] These patterns largely hold across all causes of action with some exceptions. Plaintiff win rates are higher than defendants for real property and IP, and the odds of a full grant for an antitrust defendant is nearly ten times smaller than for a partial grant. Defendants' likelihood of obtaining at least a partial grant of their *Daubert* motions is highest for antitrust and consumer credit cases, and over 50 percent for five categories (antitrust, contracts, torts, civil rights, RICO, and consumer credit). Real property and contracts are the causes of actions that have the highest level of plaintiff success in obtaining any relief, although plaintiff odds of success are below 50 percent across all types of claims.

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[20] Cases involving Commercial/ICC, Cable/Satellite, and Consumer Credit are omitted because of low numbers of observations in these categories.
[21] These differences are statistically significant at the 5% level.

TABLE 5
DAUBERT MOTION WIN RATES: BY NATURE OF SUIT

Nature of Suit	Defendant Motion		Plaintiff Motion	
	Full Grant	Any Grant	Full Grant	Any Grant
Contracts	.23	.52	.19	.43
Real Property	.19	.38	.41	.47
Torts	.30	.52	.16	.37
Antitrust	.04	.59	.25	.38
Bankruptcy	.38	.38	0	0
Banks & Banking	.27	.36	-	-
Civil Rights	.21	.56	.17	.37
RICO	.20	.53	0	0
Labor	.27	.27	0	.38
IP	.13	.39	.22	.42
Securities/Commodities	.08	.42	0	0
Environment	.09	.42	0	.25
All Causes	**.25**	**.50**	**.18**	**.40**

Table 6 shows the timing of *Daubert* motion filing. The vast majority (73.7%) of parties file *Daubert* motions either sometime prior to, or with, summary judgment motions. This finding is consistent with Flores *et al.*'s study of South Carolina federal district courts, which found that after Rule 26 disclosures judges "see a motion *in limine* to exclude testimony, followed by a flurry of briefs opposing or supporting."[22] Another 26 percent of *Daubert* motions come after summary judgment rulings have been made, and only .2 percent of the *Daubert* motions in the sample are made at trial. These patterns are similar across plaintiff and defendant motions, but plaintiffs tend to file a larger proportion of their *Daubert* motions after summary judgment motions are resolved. *Daubert* hearings are rare: only 15.8 percent of all *Daubert* motions involve a hearing, although—and perhaps not surprisingly—37.8 percent of *Daubert* motions made at trial involve a hearing.[23]

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[22] Flores *et al.* 2008, *supra* note 7, at 41.
[23] *See id*. at 41 (judges reporting that *Daubert* hearings are "rare").

TABLE 6
TIMING OF *DAUBERT* MOTIONS

	Percent Filed	Case Commencement to *Daubert* Motion (Days)	
		Average	Median
Prior to or with Summary Judgment Motions	73.7%	786	666
After Summary Judgment Ruling & Before Trial	26.1%	881	704
At Trial	.2%	618	633
Total		813	647

The average time from the case commencement date to the filing of a *Daubert* motion is over two years (813 days), but a substantially lower median (647 days) suggests that the mean is skewed by outliers. The median time increases as the timing of the filing moves from before to after summary judgment. Interestingly, the shortest average and median times to file *Daubert* motions occur when cases go to trial, suggesting that there is some factor associated with cases selected into trial that make them move more quickly.

Table 7 reports the average and median times (in parentheses) for judges to rule on *Daubert* motions, measured both from the time the moving party filed the motion and from the time that the last *Daubert* brief was filed. For the full sample, it takes on average 125 days from initial filing of the *Daubert* motion to ruling, and 84 days from the filing of the last brief associated with the *Daubert* motion until ruling. Courts appear to take longer to rule on defendant motions, perhaps because defendants tend to file *Daubert* motions earlier than plaintiffs and courts wait to rule on both parties' motions together.[24] The median durations for all categories are around 30-40 days shorter than the averages, suggesting again that these averages are driven in large part by outliers.

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[24] The median *Daubert* motion filing time for defendants is 618 days from case commencement compared to 664 days for plaintiffs.

TABLE 7
PENDENCY TIME FOR *DAUBERT* MOTIONS

Moving Party:	Duration in Days	
	Filing to Decision	Last Brief to Decision
Defendant	131.2 (90)	87.0 (54.5)
Plaintiff	108.7 (70)	77.5 (42)
All	124.7 (84)	84.2 (51)

Notes: Medians in parentheses.

Figures 2a and 2b show the distribution of *Daubert* motion pendency durations. Most motions are ruled on closer to the median time of around 84 days from filing to decision or 51 days from last briefing until decision. Although both distributions have long tails, the distribution of last brief to ruling is less dispersed than that of filing-to-ruling, likely due to the fact that more factors can interfere with the case flow in the time between filing the motion and final brief that have little to do with judicial attention paid to the *Daubert* motion. For example, parties may file other motions or request extensions to file response and reply briefs. Accordingly, in what follows, unless otherwise noted, the focus of the analysis is on the duration from the last brief—rather than filing—to the *Daubert* ruling, as this measure is more likely to capture factors that are within judicial control.

Figure 2a

Distribution of Timing: Filing to Ruling

Days from Filing to Ruling

Figure 2b

Distribution of Timing: Last Brief to Ruling

Days from Last Motion to Ruling
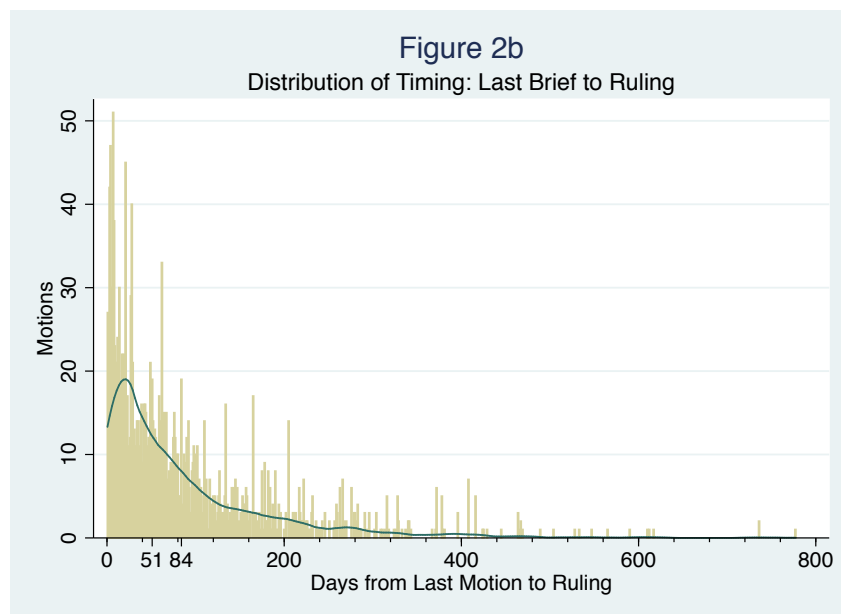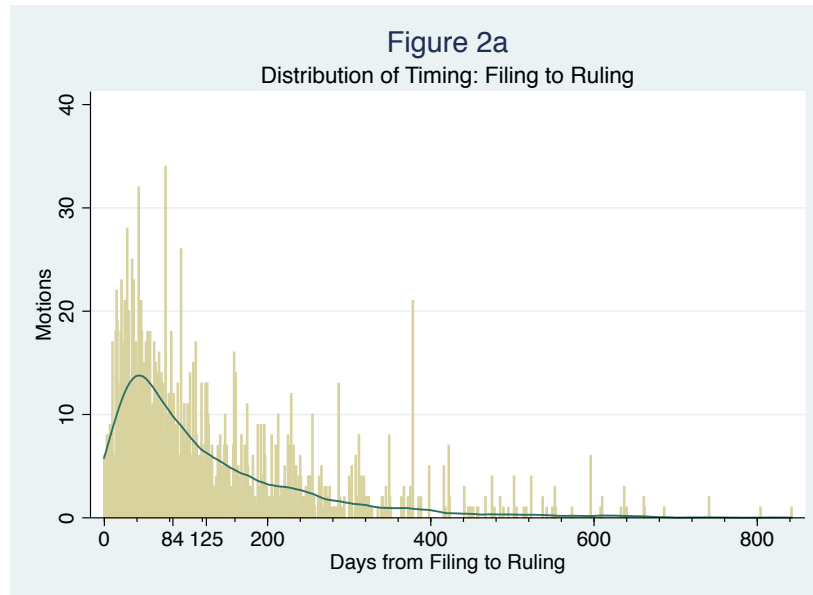
Because a large number of *Daubert* motions are filed with summary judgment, many *Daubert* decisions are handed down with summary judgment rulings. This factor could bias duration upwards, as courts may wait to rule on all motions together. Table 8 breaks down average pendency durations by the timing of the ruling. The data are consistent with the conjecture; courts that rule on summary judgment and *Daubert* motions simultaneously take around a month longer than those ruling before summary judgment, and about 19 days longer than those that rule on *Daubert* motions after summary judgment. These differences persist when measured at medians as well.

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TABLE 8
DAYS PENDING BY TIMING OF RULING

Time of *Daubert* Ruling in Relation to Summary Judgment Ruling:	Mean	Median	Number
Before SJ	73.9	49	513
With SJ	101.9	69	599
After SJ	84.1	40	595

Table 9 lists average and median pendency times by nature of suit.[25] The type of suit may impact the time it takes a court to rule to the extent that different causes of action involve more complexity. Environmental cases have the longest average and median durations (203 and 165 days, respectively). The most common causes of action—torts, contracts, IP, and civil rights—each have relatively similar average (median) durations, ranging from 65 to 81 (34-51) days. This finding may suggest that the relatively higher pendency durations from other causes of action are artifact of small sample sizes. It is also interesting to note that IP and antitrust, which often deal with highly technical issues and complex statistics, have among the lowest pendency times.[26] These findings may suggest that the time it takes a court to rule on a *Daubert* motion may have little to do with the underlying complexity of the case.

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[25] Cases involving Commercial/ICC, Cable/Satellite, and Consumer Credit are omitted because of small sample sizes.
[26] The low pendency time for IP could be an artifact of the *Markman* hearing process for claim construction in infringement cases. These proceedings often involve experts, come early in the case, and involve a discrete issue. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

TABLE 9
DAUBERT MOTION PENDENCY TIME BY NATURE OF SUIT

Nature of Suit	Number of Motions	Average Duration	Median Duration
Environment	41	203	165
RICO	16	159.5	116
Securities/Commodities	23	142.6	72.5
Real Property	59	138	59
Other	37	109.1	90
Labor	34	104.1	58
Bankruptcy	12	101.4	107
Torts	1,087	81.6	51
Civil Rights	243	78.1	51
Contracts	324	73.8	52
IP	197	65.2	34
Antitrust	35	55.7	25
Banks & Banking	11	35.2	29

Figure 3 shows the distribution of average and median durations of *Daubert* motion pendency from the time of the last brief for each court, ranked by average from highest to lowest. Clearly, there is a large distribution, ranging from nearly 300 days to less than ten days.   Further, differences between medians and averages exist for most courts, suggesting skewed distributions of duration within courts as well as across them. Of course, small sample sizes for several courts may be driving some of the variance in the observed distribution. Table A1 in the Appendix, provides the detail underlying Figure 3.

Figure 3

Mean and Median Pendency Durations: Last Brief to Ruling by Court
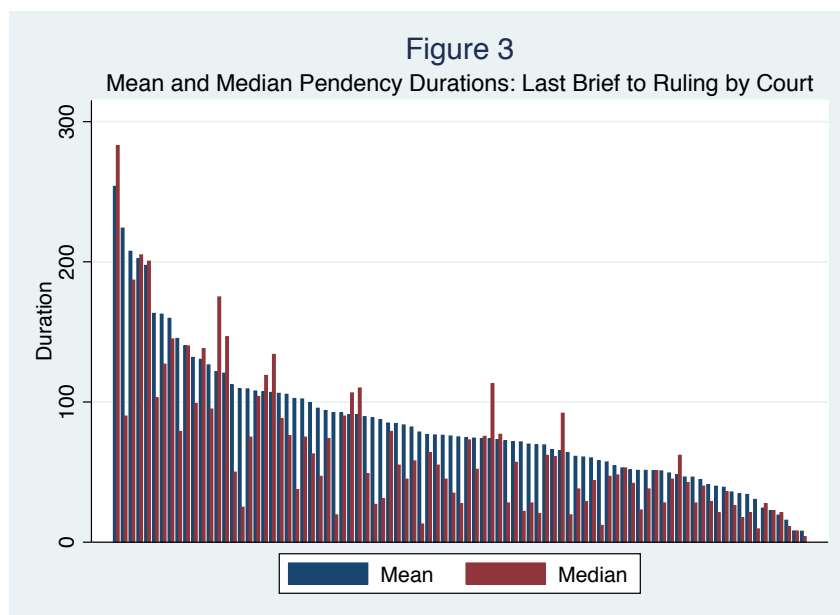
Figure 4 explores whether the duration of *Daubert* motion pendency has changed over time.[27] Although there is a slight upward trend in mean duration time from 2005-2009, medians are relatively stable over the sample period, suggesting that any trend in means is merely an artifact of outliers and a relatively small number of observations for certain years (e.g., 36 observations in 2009). Further, the median duration is substantially lower than average duration in every year, suggesting that large right-tail observations are driving the averages.

Figure 4

Average and Median Pendency Duration: 2005-2013
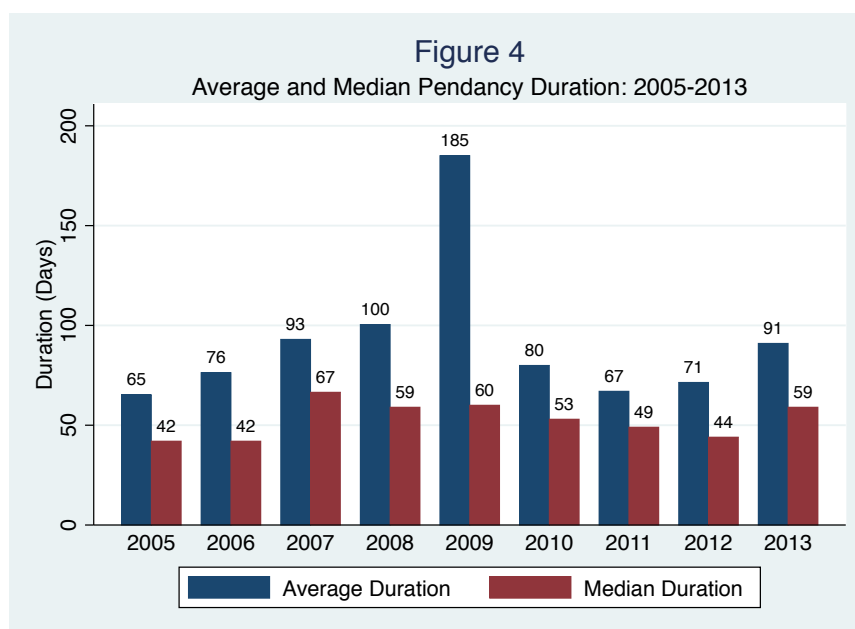
[27] 2003, 2004, and 2013 are omitted due to a low number of observations.

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Having examined univariate statistics related to the time that it takes courts to rule on *Daubert* motions, results from survival analysis are presented next. Survival models estimate the probability that a subject will survive to time *t+1* given that they have survived to time *t*. Subjects remaining in the sample—those that survive to time *t*—are said to be at hazard of suffering a failure event (*e.g.*, a death or a mechanical failure) that removes them from the sample. In the following analysis, the "subject" is a *Daubert* motion and the failure event that ends survival of a motion is a judicial ruling. Thus, the survival function, *S(t)*, measures the probability of a *Daubert* motion continuing to be unresolved at time *t* given that it has yet to be ruled on.[28] Figure 5 shows the survival function for all cases. Rulings occur rapidly for most cases—after fifty days of pendency, courts have ruled on half of the motions, and after 100 days over 70 percent of *Daubert* motions have been decided. As time goes on, however, the slope of the survival function flattens, indicating that a decreasing number of additional rulings occur each period.

Figure 5
Baseline Survival Function: Daubert Ruling as Failure
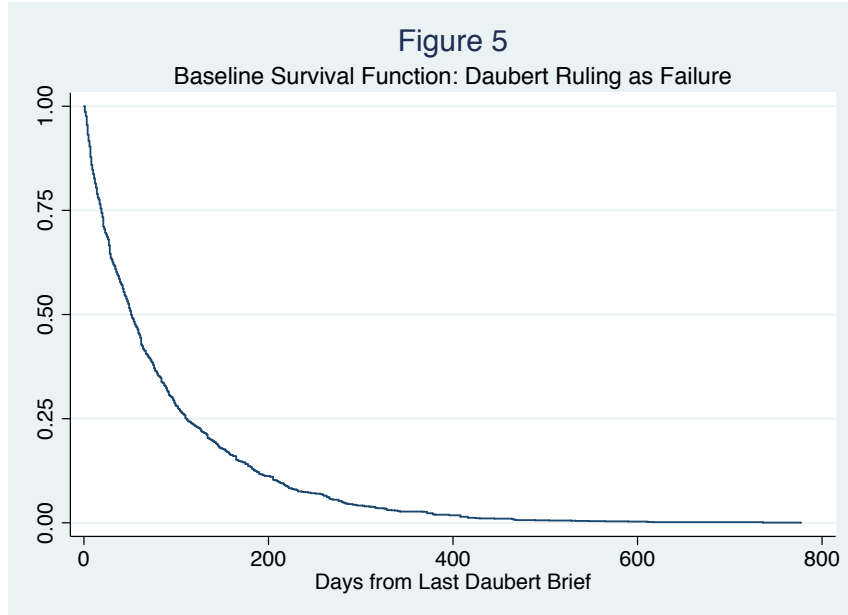
Figure 6 shows the survival function for each of the most common causes of action in the sample—contracts, torts, IP, and civil rights. All but IP have nearly identical *Daubert* survival rates. Courts appear to dispose of *Daubert* motions more quickly in IP cases: after 50 days, half of the *Daubert* motions are still pending (surviving) for torts, contracts, and civil rights claims, whereas only 39 percent of claims are still pending for motions in IP cases. This may be an artifact of the

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[28] Because all *Daubert* motions in the sample are ruled on, there is no censoring.

Markman hearing procedure, in which courts consider claim construction issues prior to trial or summary judgment. Expert testimony is often offered in a *Markman* hearing, and thus is subject to *Daubert* challenge.[29]

Figure 6
Survival by Nature of Suit: Daubert Ruling is Failure Event
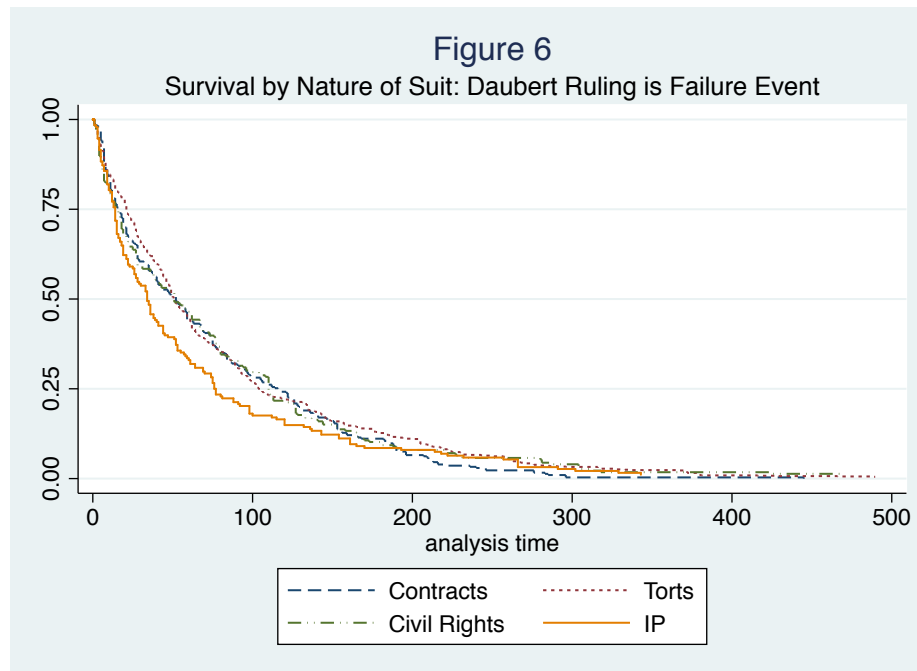
To examine the impact of multiple factors that are likely to influence the timing of *Daubert* rulings, a Cox proportional hazards model is estimated, in which the instantaneous rate of failure is modeled as a function of multiple variables:

$$log\left(\frac{h(t;X)}{h_0(t)}\right) = \beta X. \qquad (1)$$

In (1), $\frac{h(t;X)}{h_0(t)}$ is the ratio of the hazard rate conditional on covariates (X) to the baseline hazard function ($h_0(t)$), which is the rate of failure at time t without the influence of any covariates.[30] β is a vector of coefficients that relates changes in X to

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[29] *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996). *See also* Sam S. Han, Daubert & Markman: *Fact Experts on Issues that are Wholly Devoid of Any Factual Component*, 50 INTELLECTUAL PROP. L. REV. 367 (2010).

[30] The hazard function underlies the survival function, and it measures the instantaneous rate at which an event that takes a subject out of the sample will occur at time *t+1* given that it has not occurred to that point. Formally, the survival function, *S*(*t*) is related to the hazard rate, *h*(t) in the following manner: $S(t) = \frac{f(t)}{h(t)}$, where *f*(*t*) is the probability density function of time to failure. *See* GREENE, ECONOMETRICS 986-89 (3d Ed. 1993). The Cox proportional hazards model is non-parametric and it is assumed that covariates shift the baseline hazard by the same amount for all values of *t*. A weibull hazard model, which assumes that failure is distributed according to a weibull

changes in the hazard ratio. As with the survival analysis presented above, the failure event is a *Daubert* ruling, and *t* measures the time from the last *Daubert* brief until *Daubert* ruling. The parameter estimates are reported as hazard ratios, which in this context measure the change in relative risk of a ruling occurring at any time due to a one-unit change in a control variable. Parameter estimates greater than one suggest that the variable increases the likelihood of a ruling at any time, and those less than one suggest the opposite.

Table 10 presents estimates of this model with various controls. The first specification controls for which party filed the motion, whether the motion was granted or denied, when the motion was filed (before or after summary judgment), the total number of *Daubert* motions filed in the case, and the cause of action. There is no statistically significant association between the *Daubert* outcome, the number of motions or the party filing a *Daubert* motion, and the time it pends before a court. Somewhat surprisingly, the results suggest that relative to a motion filed after summary judgment, the rate of ruling is 16 percent *lower* than for a motion filed before summary. This result may be picking up the fact that, as reported in Table 8, the longest pendency times are for those *Daubert* motions resolved with summary judgment rulings. Real property, RICO, and environmental cases all are associated with longer pendency times (relative to the baseline of contract cases), whereas *Daubert* motions in banking cases are almost twice as likely as contract cases to be ruled on at any given time.

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distribution and allows the impact of covariates to vary over time, was also estimated and yields almost identical results.

TABLE 10

ESTIMATED COX PROPORTIONAL HAZARD ESTIMATION: *DAUBERT* RULING AS FAILURE EVENT

	(1)	(2)	(3)
Defendant Motion	.911	.889*	.927
	(.060)	(.062)	(.068)
Daubert Win	.960	.947	.887*
	(.064)	(.060)	(.061)
Filed Before SJ Ruling	.844*	.784***	.804**
	(.081)	(.071)	(.077)
Total Number of Motions	.990	1.017*	1.026*
	(.018)	(.013)	(.014)
Cause of Action:			
Torts	.935	.993	1.013
	(.088)	(.107)	(.110)
IP	1.128	1.112	.926
	(.143)	(.159)	(.151)
Civil Rights	.951	.886	1.187
	(.125)	(.146)	(.168)
Real Property	.579**	.658	
	(.161)	(.179)	
Antitrust	1.272	1.029	
	(0.520)	(.416)	
Bankruptcy	. 787	.819	
	(.347)	(.224)	
Banks & Banking	1.910*	1.807	
	(.640)	(.684)	
RICO	.532*	.380**	
	(.189)	(.187)	
Labor	.734	.943	
	(.236)	(.282)	
Securities/Commodities	.563	.613	
	(.284)	(.322)	
Environment	.418***	.595**	
	(.106)	(.122)	
Other	.671*	.714	
	(.143)	(.183)	

TABLE 10(CONT.)

Expert Type:			
Accountant	-	.948 (.161)	.974 (.178)
Business	-	.789 (.142)	.686** (.132)
Economics	-	.896 (.164)	.918 (.182)
Engineering, Technical, Environmental	-	.778* (.112)	.716** (.104)
Law	-	.905 (.148)	.838 (.141)
Medical	-	.802 (.121)	.746** (.112)
Police/Law Enforcement	-	1.027 (.182)	.988 (.183)
Public Administration	-	.684 (.185)	.703 (.208)
Social & Behavioral Sciences	-	1.262 (343)	1.422 (.427)
Vocational Expert	-	.840 (.151)	.812 (.157)
Other	-	1.058 (.206)	1.048 (.214)
Court Controls	N	Y	Y
Year Controls	N	Y	Y
N	1,996	1,995	1,733
Wald Chi2	561.12***	1777.86***	1543.25***

Notes: Robust standard errors clustered at judge level in parentheses. ***Significant at 1% level; **Significant at 5% level;   *Significant at 10% level.

The second specification includes additional controls for court, expert type, and year. This time, the hazard ratio for party is statistically significant, suggesting that the rate at which judges decide defendants' motions is 12 percent lower than the rate for plaintiffs' motions. Somewhat counter intuitively, the results also show a small (2%) increase in odds that a motion is ruled on associated with each additional *Daubert* motion. The coefficients on causes of action reveal the same pattern as specification (1). The only types of experts that have a statistically significant association with *Daubert* ruling timing are engineering/technical/environmental and medical experts, each associated with 22 and 26 percent lower odds of resolution, respectively. The third column repeats the analysis, but restricts it to only contracts, torts, IP, and civil rights, which combine for 87 percent of the cases in the sample. Again, motions filed before summary judgment are associated with lower probabilities of being ruled on at any time. In this specification, winning motions

have a statistically significant and negative association with the probability of a *Daubert* ruling at any time. There appears to be no association between the party filing and the relative hazard of a ruling. None of the causes of action have a statistically different hazard from contracts, although the difference between the hazard ratio of IP and civil rights claims is statistically significant, and reflects what was seen in Figure 6. The impact of expert type is nearly identical to that estimated in prior specifications.

3.2   *Daubert* Outcomes and Case Disposition

This section examines the extent to which litigation outcomes—settlements and plaintiff win rates at trial and summary judgment—vary by *Daubert* outcomes. Table 11 explores the relationship between *Daubert* outcomes and subsequent litigation outcomes. The first three columns report the percentage of motions that are associated with a case that settles, ends in summary judgment, or ends in trial.[31] There is essentially no difference in the proportion of cases that settle based on *Daubert* outcomes, as the settlement rate ranges between .59 and .62. This finding is somewhat surprising, as one would expect that losing a *Daubert* motion would increase incentives to settle as it likely would cause parties to revise their odds of prevailing in litigation downward. One possible explanation for this finding is that given multiple *Daubert* rulings for each case, conflicting outcomes may confound the impact of bad news. For example, it is unclear if settlement would be more or less likely if both parties were successful in striking their opponent's expert.[32] To control for this possibility, outcomes that involve cases that had only one *Daubert* motion are listed in parentheses. Although this narrower focus reveals similar settlement patterns with respect to defendant motions, the differences in the rates of settlement between *Daubert* wins and losses are larger for plaintiffs. 71 percent of cases involving only one *Daubert* motion settle when a plaintiff is successful in striking a defendant expert, whereas only 59 percent settle when the motion is denied, a difference that is significant at the 10 percent level. The lack of a strong finding with respect to the impact of outcomes on settlement should not be that surprising; the outcome of *Daubert* motions provide the same information to both parties and should make settlement more likely regardless of outcome. A *Daubert* win or loss will impact only the settlement amount, which is unobservable.

The disposition of cases that do not settle does not appear to vary by the outcome of defendants' *Daubert* motions. A roughly equal proportion (19-20 percent) of cases associated with granted and denied motions end in either trial or summary judgment. The differences get larger when focusing on cases with only one *Daubert* motion, with roughly one-third more cases ending in summary judgment than trial when defendants' motions are granted (.15 v. .22). However, this pattern

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[31] Because most cases have multiple *Daubert* motions, the unit of observation is the *Daubert* motion, not the case.

[32] Logit regressions (not reported) controlling for year, cause of action, expert type, court, and number of *Daubert* motions filed in the case (clustered at the judge level) find no statistically measurable impact of *Daubert* outcome on the probability of settling.

also holds when defendants' motions are denied, with a similar magnitude (.18 vs. .23), although neither difference is statistically significant. For plaintiffs, there appears to be a stronger relationship between *Daubert* outcome and disposition type. Of the cases that do not settle, over four times as many end in trial than summary judgment when plaintiffs are successful in challenging defendant expert reports (.07 vs. .32). When *Daubert* motions are denied, however, the ratio of cases ending in trial to those ending in summary judgment is less than two-to-one (.25 vs. .16). A similar pattern holds when focusing only on cases that involve one *Daubert* motion: a little more than three times as many cases go to trial than end in summary judgment when plaintiff motions are granted (.22 vs. 07), whereas the trial-to-summary judgment ratio is barely greater than one when *Daubert* motions are denied (.25 vs. .21). Thus, conditional on a case not settling, the data suggest—not surprisingly— that when plaintiffs are successful in striking defendant experts, they are more likely to survive summary judgment and make it to trial.

TABLE 11
LITIGATION OUTCOMES BY *DAUBERT* OUTCOMES

	Case Disposition			Plaintiff Win Rate		
	Settle	SJ	Trial	All	SJ	Trial
Plaintiff Motion						
Granted	.606 (.712)*	.071*** (.068)*	.324* (.220)	.421** (.647)**	.412*** (.500)*	.423 (.692)
Denied	.588 (.593)	.160 (.210)	.251 (.247)	.286 (.303)	.117 (.154)	.394 (.400)
Defendant Motion						
Granted	.618 (.630)	.189 (.216)	.193 (.154)	.254 (.274)	.139 (.102)	.367 (.514)
Denied	.615 (.596)	.185 (.228)	.20 (.175)	.308 (.319)	.187 (.179)	.420 (.500)

Outcomes for cases with only one *Daubert* motion listed in parentheses. Differences between granted and denied motion: *** Significant at the 1%-level; ** Significant at the 5%-level; * Significant at the 10%-level.

The second panel in Table 11 reports plaintiff litigation win rates by case disposition and *Daubert* outcome. Win rates follow the expected pattern; they are highest when courts grant plaintiffs' motions and reject defendants' motions, and lowest when the opposite is true. For example, plaintiffs' average overall win rate (both summary judgment and trial) is .42 when their motions are granted, compared to .29 when their motions are denied. Further, plaintiffs win 31 percent of the cases

when defendants' motions are denied and only 25 percent when defendants' motions are granted. This pattern holds for all disposition types, although the difference in win rates for trials is much smaller and not statistically significant, which is consistent with only the strongest cases—*i.e.*, those that still have a non-trivial chance of prevailing with expert testimony stricken or limited—being selected into trial.

The patterns remain basically the same when examining cases involving only one *Daubert* motion. Plaintiff win-rates rise across the board, and the gap between trial win rates with respect to plaintiff motion outcomes jumps from .02 to a statistically significant .29. This pattern makes sense because if the plaintiff is successful in striking the defendant's only expert, its odds of prevailing at trial likely increase dramatically. Surprisingly, there is no difference in plaintiff win rates when the defendant wins or loses its only *Daubert* motion. Again, this is likely an artifact of case selection: plaintiffs who lost expert testimony that was crucial to their case likely settled or lost at summary judgment, with only those cases that do not rely on stricken expert testimony surviving.

3.3   Timing of *Daubert* Rulings and Early Case Termination

This section explores the hypothesis that because *Daubert* rulings provide information to parties, they spur early case termination. To motivate this hypothesis, consider two cases filed at the same time. Both cases proceed on identical timelines, including the filing of *Daubert* motions, except that the court in case *A* makes its *Daubert* ruling before the court in case *B*. As a consequence, case *A* enters the post-*Daubert* ruling phase more quickly and has a higher probability than case *B* of settling during this time window. This is consistent with litigation theory, which generally predicts that failure to settle is due to a lack of information that causes parties to be relatively optimistic about their cases.[33]   For example, a plaintiff may believe that her chance of prevailing at trial is .80, and a defendant, viewing the same evidence may believe that the plaintiff's chance of winning is .30.[34] These differing beliefs could arise because the law in this area is unsettled, the evidence is open to different interpretations, or one party has private information about the case.[35] To the extent that *Daubert* rulings reveal information about parties' odds of

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[33] *See*, *e.g.*, George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984).

[34] In the standard litigation model, the plaintiff values her case at $P_p * D - c$, where P_p is the plaintiff's estimate of her probability of prevailing, D is damages that will be awarded if the plaintiff wins, and c is litigation costs. If the defendant's estimate of the plaintiff's probability of prevailing in litigation is P_D, both parties have the same costs and both parties agree on D, a case goes to litigation only if $P_p - P_D > \frac{2c}{D}$. Accordingly, this case would settle only if the ratio of total litigation costs to expected damages is were greater than .5.

[35] *See*, *e.g.*, Keith N. Hylton, *Asymmetric Information and the Selection of Disputes for Litigation*, 22 J. LEGAL STUD. 187 (1993).

prevailing at trial, they should make settlement more likely.[36] *Daubert* rulings that eliminate or greatly retard a plaintiff's ability to mount a case—for example, by striking the testimony of a medical expert in a medical malpractice case— will impact the odds of prevailing.[37] This new information will be apparent to both parties, and may make the plaintiff more willing to accept the defendant's settlement offer by increasing the odds that the defendant will prevail at summary judgment. This theory is also consistent with anecdotal information from earlier studies. [38]

The data appear to support the hypothesis. First, Figure 7 shows the distribution of case duration from *Daubert* ruling to case termination. As can readily be seen, the distribution is heavily skewed toward zero. A quarter of all case settle or are resolved through summary judgment within 36 days of a *Daubert* ruling. This suggests that *Daubert* rulings are key inflection points in litigation. Accordingly, the longer a *Daubert* ruling is delayed, the longer it takes a case to reach this inflection point and hence the longer the case pends before the court.

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[36] *See* Flores *et al.* 2008., *supra* note 7, at 32 (quoting a South Carolina attorney who notes that *Daubert* rulings "play an important role in helping the parties evaluate their relative positions in the case and help parties understand the case in a way that helps them resolve it.").

[37] *See*, *e.g., Hill v. Sqibb & Sons*, 592 P.2d 1383 (Mt. 1979) (expert testimony required to show that drug company failed to adequately warn); *Wills v. Amerada Hess Corp.*, 379 F.3d 32 (2d Cir. 2004) (expert testimony required to prove causation in toxic tort case); *Hughes v. Dist. of Columbia*, 425 A.2d 1299 (D.C. Cir. 1981) (expert testimony required to establish proper care in correctional institute case); *District of Columbia v. Hampton*, 666 A.2d 30 (D.C. Cir. 1995) (expert testimony required in medical malpractice claim); *Moore v. Crone*, 970 A.2d 757 (Conn. App. Ct. 2009) (expert testimony required in legal malpractice claim); *Avilla v. Willits Environmental Remediation Trust*, 633 F.3d 828, 836 (9th Cir. 2011) (noting that under California law "in a personal injury action causation must be proven within a reasonable medical probability based upon competent expert testimony."); *Arias v. Dyncorp*, 752 F.3d 1011 (D.C. Cir. 2014) (noting that D.C. law requires expert testimony "where the parties offer competing causal explanations for an injury that turns on scientific information").

[38] *See* Flores *et al.* 2008, *supra* note 7, at 41 (finding that when a defendant's motion to exclude is denied, "serious settlement talks are usually provoked."); Waters & Hodge, *supra* note 7, at 16 (finding that *Daubert* rulings tended to lead to out of court settlements).

Figure 7

Distribution of Time from Daubert Ruling to Case Termination
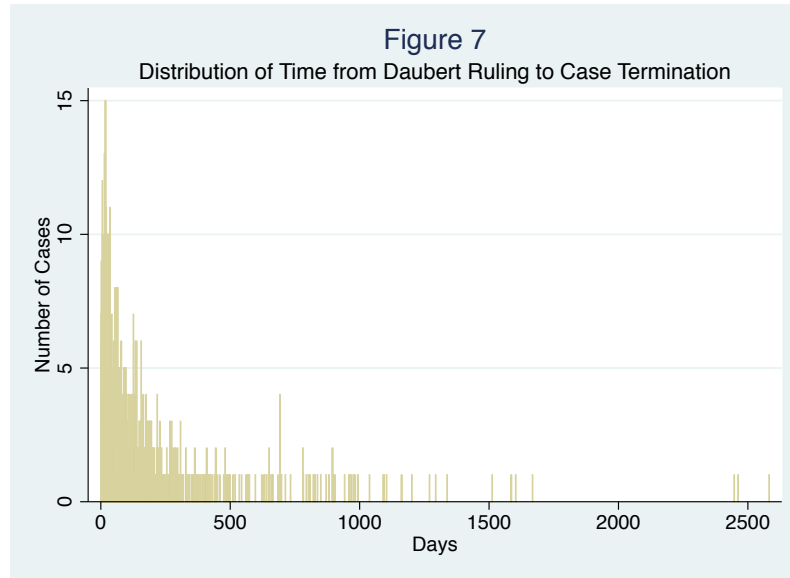
Next, survival analysis is used to estimate the impact of *Daubert* pendency durations on rate of early termination. Figures 8 and 9 show baseline survival functions that estimate the cumulative probability that a case beginning at time $t=t_0$ has ended before trial (settled or summary judgment) by time t_0+t, where time is measured in days from initial commencement of the case. Unlike the survival curves for *Daubert* decisions that fell rapidly then leveled off, case survival is flat for almost the first year, reflecting the fact that few cases involving experts end early; after 300 days, only two percent of cases have terminated. Between 400-500 days, the case termination rate picks up and remains relatively constant. After 1,000 days, 398 cases have settled, 117 have ended due to summary judgment, and 107 cases have ended in trial. The estimated probability of a case neither settling nor ending in summary judgment, conditional on being active after 1,000 days, is 44 percent, and avoiding exit due to settlement is 54 percent.

Figure 8

Case Survival: Settlement or Summary Judgment is Failure Event

Figure 9

Case Survival: Settlement is Failure Event
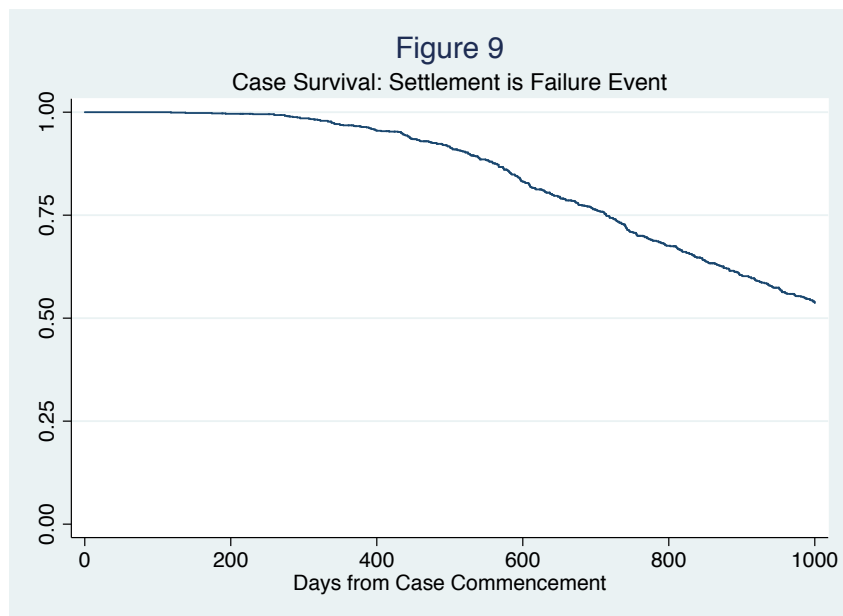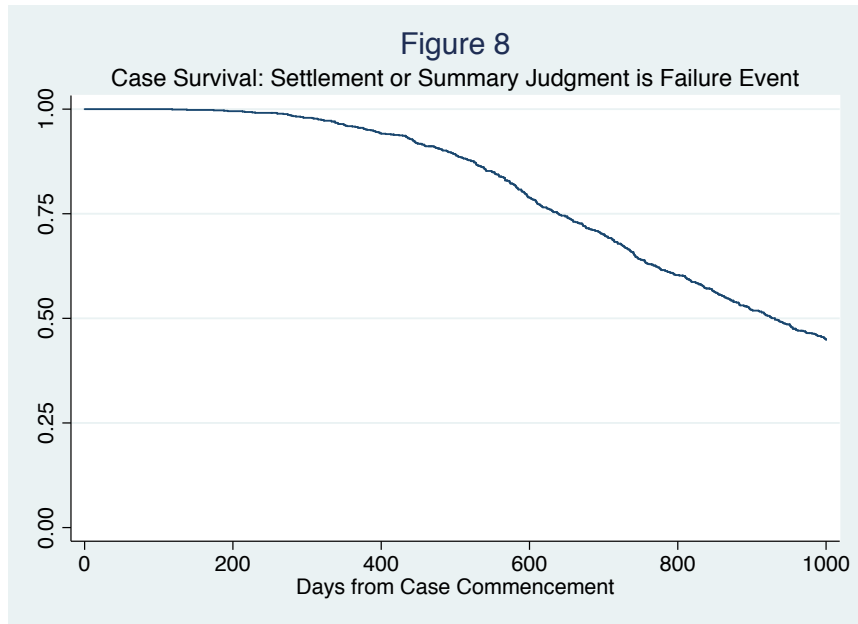
Figures 10 and 11 replicate the baseline analysis from Figures 8 and 9, but break the sample into quartiles based on the length of time it took courts to rule on *Daubert* motions associated with these cases. Like the full sample survival curves, almost no cases leave the sample for about the first year. The survival curves begin to fall earliest for the first and second quartiles, and not until nearly 500 days for the third and fourth quartiles. As cases begin to fall from the sample, a separation

between quartiles is revealed, with cases having the earliest *Daubert* rulings falling out sooner than those in the other quartiles. For example, at day 500, 83 percent of cases having the earliest *Daubert* rulings survive compared with 93 percent of cases with the latest *Daubert* rulings. The gaps are larger when settlement is the failure event. With both summary judgment and settlement as failure, there is little difference between the second and third quartiles. That the gaps between quartiles appear to narrow slightly as the case duration increases reflects the fact that after a certain time period, the likelihood of case termination falls; as most cases are selected into summary judgment or settlement, only those that are hardest to resolve are left.

Figure 10

Case Survival: Settlement or Summary Judgment as Failure, Daubert Ruling Timing

Figure 11
Case Survival: Settlement as Failure, by Daubert Ruling Timing
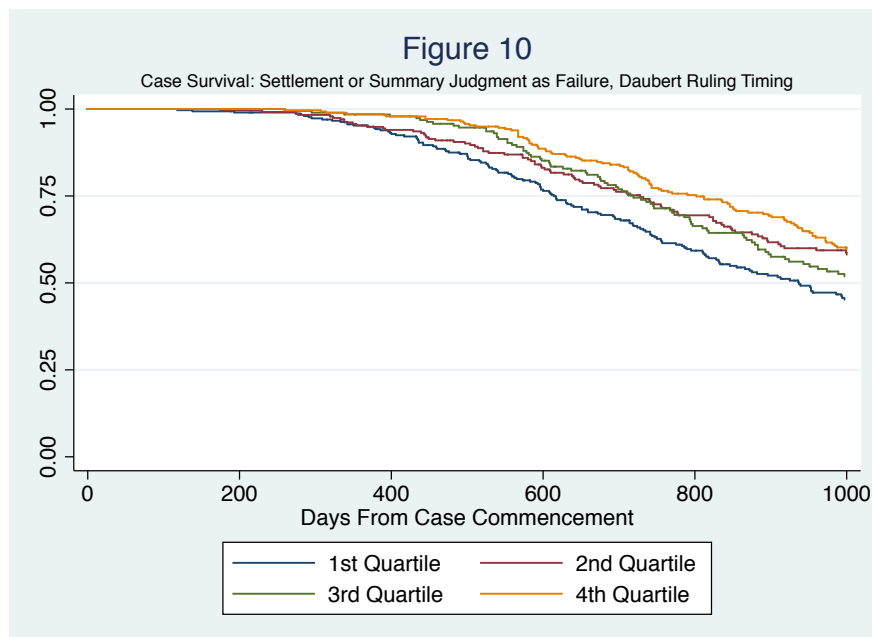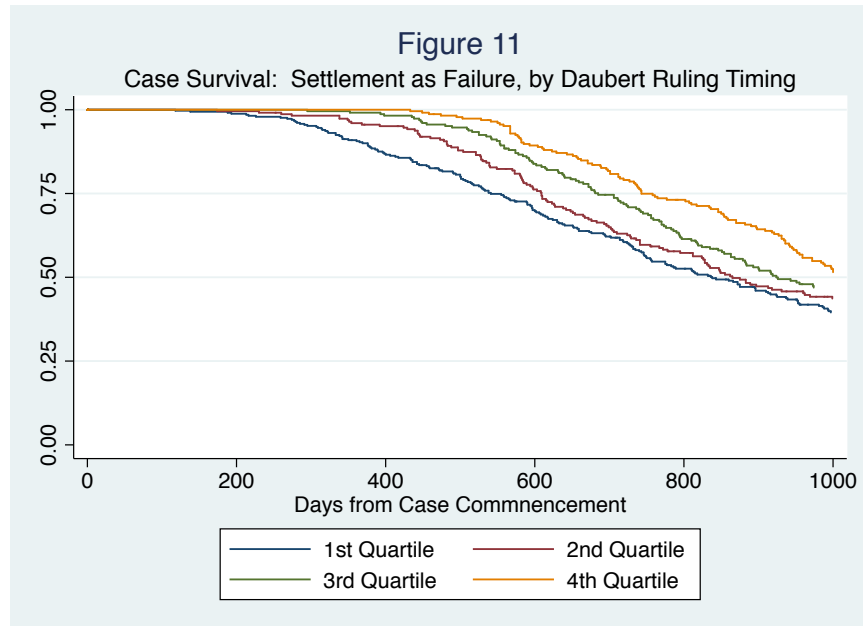
The time that it takes judges to rule on *Daubert* motions is not randomly distributed across cases, and it is likely that some of the factors associated with the time a motion pends are also related to the likelihood that the underlying case settles or ends with summary judgment. For example, it may be that the complexity of *Daubert* motions is positively associated with the complexity of the underlying case, and judges strategically delay ruling on *Daubert* motions associated with complicated cases in hopes that parties settle before they must rule. Further, the same factors that make *Daubert* motions easy to decide also may cause cases to settle or end in summary judgment early; it may be relatively easy to rule on a *Daubert* motion against expert testimony in a weak case, and weak cases are also disposed of more quickly. If the timing of *Daubert* rulings is not exogenous, then the estimated impact of the time a motion pends on the likelihood of settlement will be biased, and the estimated survival curves in Figures 10 and 11 may not represent the true relationship between the time it takes judges to rule on *Daubert* motions and early termination rate.

In an attempt to alleviate endogeneity concerns, a Cox proportional hazards model was used to estimate the relationship between the rate at which cases end before trial through settlement or summary judgment and the length of time it takes a court to rule on *Daubert* motions. The following additional controls were included to help ameliorate the impact of unobserved variables that may be associated both with *Daubert* motion pendency duration and the likelihood that a case settles: number of *Daubert* motions; cause of action; moving party; *Daubert* outcome; year and court fixed effects.[39] The sample was limited to torts, contracts, IP, and civil rights, and

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[39] To further control for the possibility of endogeneity of *Daubert* ruling timing, a two-stage estimated procedure was performed. The results of this procedure (presented in the Appendix) do not reject the

robust errors were clustered by judge to account for the fact that *Daubert* rulings from the same judge are unlikely to be independent.

The Cox models are estimated at the motion level—that is, the unit of observation is a motion rather than a case.[40] This is done because it has the advantage of additional power and the ability to control for a richer set of variables than can be controlled for when motions are aggregated. For example, regressions at case level cannot control for moving party, type of expert, or disposition of *Daubert* motion. A problem that arises from this approach, however, is that too much weight is put on cases with a large number of *Daubert* motions. If the number of motions per case were distributed randomly, it would not pose a problem. However, those cases with the most motions tend to have longer durations.[41] To ameliorate this problem, controls for the number of *Daubert* motions per case are included. Further, all specifications were also estimated at the case level (reported in Appendix B), and yield nearly identical results.

Table 12 presents the results from various specifications, all of which show a statistically significant negative relationship between the time a *Daubert* motion pends with the court and the odds that a case will settle or end in summary judgment at any time. The estimated parameter on *Daubert* motion timing is small in magnitude, due to measurement being in days, which is a small time increment in relation to the average length of a case (1,005 days). The estimated hazard ratio suggests that a one-day increase in the time it takes a court to rule on a *Daubert* motion reduces the odds of early termination by .2 percentage points. Holding all else constant, this means that the rate of settlement is nearly ten percentage points lower for cases with median pendency durations (51 days) compared to those in the 10th percentile (6 days). Those cases with pendency durations in the 90th percentile (210 days) are three times less likely to settle than those with median pendency durations.

The total number of *Daubert* motions in the case also has a negative impact on the odds that a case settles or ends early due to summary judgment, again probably reflecting underlying complexity of the case. Moving party and *Daubert* outcome have no impact on case duration. There is little association between cause of action and duration, although there is a weakly significant decrease in the early termination rate of around 36 percent for civil rights cases in the models with full controls. Torts have a 50 percent higher rate of early termination, but this effect disappears once the full set of controls is added. Civil rights cases are the only claims to have a different early termination rate from contracts (estimated 34-35 percent lower) once year, court, and expert controls are added.

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hypothesis that *Daubert* ruling timing is exogenous. Thus, the coefficient estimates in Table 12 are not likely to suffer from endogeneity bias.

[40] Because we observe all cases through termination—either by trial, summary judgment, or settlement—there is no censoring.

[41] The average duration of cases with less than four *Daubert* motions is 739 days, compared with 888 days for cases with more than four *Daubert* motions.

TABLE 12
SURVIVAL REGRESSIONS: *DAUBERT* RULING TIMING & CASE DURATION

	Settle as Failure			Settle or Summary Judgment as Failure		
Days From Last Brief to Ruling	.998 *** (.001)	.998*** (.001)	.998*** (.001)	.999 (.001)	.999** (.0005)	.999** (.001)
Defendant Motion	-	.902 (.085)	.968 (.095)	-	.986 (.100)	1.10 (.114)
Granted	-	1.06 (.103)	.952 (.098)	-	1.097 (.111)	.972 (.096)
Number of Motions	-	.893*** (.024)	.888*** (.027)	-	.886*** (.020)	.875*** (.025)
Torts		1.49*** (.229)	1.13 (.213)		1.27 (.217)	1.041 (.170)
Civil Rights		1.03 (.194)	.639* (.155)		.972 (.192)	.646* (.152)
IP		1.05 (.196)	1.17 (.269)		.858 (.170)	.977 (.245)
Year, Court, and Expert Controls	N	N	Y	N	N	Y
Wald Chi2	8.51***	42.33***	1137.94***	1.91	41.73***	1250.96***
N	1,740	1,740	1,739	1,330	1,330	1,329

Estimated Cox proportional hazard ratio reported; in the first panel, a settlement is defined as the failure event; in the second panel, settlement or summary judgment is defined as the failure event; full controls include year, nature of suit, and court effects, plus control for party and *Daubert* outcome. Robust standard errors clustered by judge in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

In addition to *Daubert* rulings, summary judgment rulings also provide parties with information about the quality of their cases. To the extent that *Daubert* rulings are issued with or near non-dispositive summary judgment rulings, the apparent positive relationship between early *Daubert* rulings and the rate of settlement may be biased upward. To control for this possibility, the first panel in Table 13 reproduces the survival regressions from Table 12 with settlement as the failure event, but removes all cases in which summary judgment and *Daubert* motions were decided simultaneously. The second panel removes all cases in which a summary judgment motion was made. If anything the results are stronger, as the estimated association between *Daubert* ruling timing and the instantaneous rate of settlement ranges from a 2-6 percent reduction in the rate of settlement. Also, as in the full sample results, the number of motions is negatively associated with settlement rates.

TABLE 13

SURVIVAL REGRESSIONS WITHOUT SIMULTANEOUS SUMMARY JUDGMENT RULINGS

	Settle as Failure: No Simultaneous Summary Judgment Rulings			Settle as Failure: No Summary Judgment Rulings		
Days From Last Brief to Ruling	.998*** (.001)	.998*** (.001)	.997*** (.001)	.997 * (.001)	.997** (.001)	.994*** (.001)
Defendant Motion	-	.928 (.102)	.980 (.113)	-	.781 (.144)	.845 (.198)
Granted	-	1.022 (.116)	1.047 (.121)	-	1.37 (.292)	1.36 (.401)
Number of Motions	-	.939* (.032)	.931* (.039)	-	.889** (.045)	.806*** (.062)
Torts			1.611** (.373)		.876 (.250)	1.21 (.603)
Civil Rights			.941 (.270)		.490* (.184)	.363* (.226)
IP			1.067 (.330)		.517* (.178)	3.29 (2.77)
Year, Court	N	N	Y	N	N	Y
Wald Chi2	8.71***	14.23***	1,054.08***	3.31*	20.78***	2,522.55***
N	1,225	1,225	1,224	457	457	456

Estimated Cox proportional hazard ratio reported; in the first panel, a settlement is defined as the failure event; in the second panel, settlement or summary judgment is defined as the failure event; full controls include year, nature of suit, and court effects, plus control for party and *Daubert* outcome. Robust standard errors clustered by judge in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

The results in Tables 12 and 13 reflect the average effect of an extra day of *Daubert* motion pendency on the rate of early case termination. The importance of expert testimony, however, is likely to vary by case. For example, because expert testimony is a required element of products liability or medical malpractice claims, a *Daubert* grant would increase the odds of a defendant winning summary judgment and concomitantly increase the odds of a settlement. Alternatively, to the extent that a large portion of expert testimony in contract cases relates to damages, the exclusion of experts early in the case would have little impact on liability. Thus, the impact of *Daubert* delay on early disposition is likely to vary by case type.

To address this empirical question, Table 14 reports Cox proportional hazard estimates in which the *Daubert* pendency time is interacted with controls for cause of action. Contract claims serve as a benchmark; it is expected that delay in *Daubert* rulings will have a larger impact on other causes of action because such rulings are inflection points regarding the viability of the claim, and hence more likely to spur settlement or summary judgment. The first two columns use settlement as the failure event and the next two use early termination through settlement or summary

judgment as the failure event. All specifications include controls for court, expert, year, and cause of action.

TABLE 14
COX REGRESSIONS WITH NATURE OF SUIT INTERACTIONS

	Settle as Failure		Settle or Summary Judgment As Failure	
Time From Last Brief to Ruling	1.000 (.002)	1.002 (.002)	1.000 (.001)	.999 (.003)
Time X Torts	.996* (.002)	-	.999 (.002)	-
Time X Civil Rights	.996 (.003)	-	.999 (.002)	-
Time X IP	.999 (.002)	-	1.000 (.002)	
Time X Contract-Other	-	.998 (.003)	-	1.000 (.003)
Time X Contract PL	-	.995 (.009)	-	.996 (.007)
Time X Marine Torts	-	.934** (.029)	-	.880** (.046)
Time X Marine PL	-	.986*** (.003)	-	.964** (.015)
Time X Motor Vehicle	-	.991*** (.003)	-	.995 (.005)
Time X Motor Vehicle PL	-	.992 (.005)	-	1.011*** (.004)
Time X Other Personal Injury	-	.995 (.003)	-	.999 (.003)
Time X Med Mal	-	.978*** (.008)	-	.984** (.008)
Time X Product Liability	-	.997 (.003)	-	1.000 (.003)
Time X Asbestos PL	-	.947*** (.013)	-	.999 (.003)
Time X Personal Prop. Damage	-	1.013** (.006)	-	.992 (.006)
Time X Property PL	-	.965*** (.013)	-	.982 (.015)
Time X Other Civil Rights	-	.998 (.003)	-	1.000 (.003)
Time X Employment	-	.987** (.005)	-	.998 (.004)
Time X Housing	-	1.003 (.024)	-	.967* (.017)
Time X ADA – Employment	-	1.019 (.016)	-	1.022** (.010)

Table 14 (Cont.)				
Time X ADA- Other	-	1.005 (.027)	-	-
Time X Copyright	-	.992** (.003)	-	.993 (.004)
Time X Patent	-	.997 (.003)	-	.999 (.003)
Time X Trademark	-	1.000 (.005)	-	1.004 (.005)
Defendant Motion	. 966 (.095)	.895 (.093)	1.089 (.114)	.983 (.106)
Granted	. 957 (.090)	.975 (.105)	.973 (.097)	1.034 (.109)
Number of Motions	.887*** (.027)	.882*** (.027)	.874*** (.025)	.847*** (.026)
Year, Court, Nature of Suit, and Expert Controls	Y	Y	Y	Y
Wald Chi2	1,281.60***	1,759.26***	1,272.13***	1750.42***
N	1,739	1,714	1,329	1,311

Estimated Cox proportional hazard ratio reported. "PL" is products liability. Full controls include year, nature of suit, and court effects, plus control for party and *Daubert* outcome. Robust standard errors clustered at judge level in parentheses. ***Significant at 1% level; **Significant at 5% level.

The first specification examines interactions at the top-level cause of action. The results suggest that each day that a *Daubert* motion pends reduces the odds of a tort claim settling by .4 percentage points relative to contract claims. There is no statistically significant impact on IP or civil rights claims. The second specification is more flexible, reporting parameter estimates on interactions for all detailed-level nature of suit codes. The results suggest that the impact of additional days of *Daubert* motion pendency reduces the odds of settlement for medical malpractice, marine torts, several types of product liability claims, as well as copyright and civil rights employment claims. These results are consistent with the fact that such claims largely require expert testimony to succeed, meaning that *Daubert* rulings are likely to have important effects on a plaintiff's likelihood of success. Somewhat surprisingly, additional days of *Daubert* pendency do not appear to have any impact on the odds that general product liability claims settle relative to contract claims. The results reported in the last two columns of Table 14 show the same set of Cox regressions, but use any early exit—settlement or summary judgment—as the failure event. Results are generally the same, although the interactions with fewer tort claims are significant. Again, these results may be picking up the fact that judges appear to take longer to rule on *Daubert* motions that are decided simultaneously with summary judgment motions.

4. DISCUSSION

The results from Section 3 suggest that *Daubert* rulings are key inflection points in litigation. Within 100 days of a *Daubert* ruling, more than half of the cases in the sample ended in settlement or summary judgment, and survival analysis shows that an additional 40 days of *Daubert* motion pendency is associated with a ten percentage point reduction in the relative rate of termination by settlement or summary judgment. There is also some evidence that these impacts are larger for certain claims that require expert testimony to establish required elements. Further, the number of motions in a case also appears to be strongly associated with reduced likelihood of early termination. These findings have important implications for litigation costs. For example, if delay in *Daubert* rulings delay settlement, it may prolong expensive fact discovery.[42] Further, preservation costs—that is, the costs associated with having to maintain certain documents that may be subject to discovery during active litigation—can be substantial.[43] Discussions with corporate counsel and litigators suggest that some judges may delay ruling on *Daubert* motions in the hopes that parties settle. The results here, however, suggest that, such a strategy may backfire, as parties rationally need the information provided by a *Daubert* ruling to engage in fruitful settlement discussions.

The apparent importance of *Daubert* rulings to case flow also suggests that an active judicial role in managing expert testimony could reduce litigation length and its concomitant costs. Indeed, the Federal Rules of Civil Procedure (FRCP) have evolved to give judges "broad discretion to manage discovery and to control the course of litigation."[44] One procedure that courts have developed under this discretion is the so-called "*Lone Pine*" order, which requires plaintiffs to make some *prima facie* showing of injury and causation in large tort cases.[45] For example, in *Acuna v. Brown & Root Inc.*, the Fifth Circuit approved the use of a *Lone Pine* order that required plaintiffs in a suit alleging injury from exposure to uranium to provide expert affidavits that specified for each plaintiff "injuries or illnesses suffered," "the materials causing the injuries," "the dates or circumstances and means of exposure," and "the scientific and medical bases for the expert's opinion."[46]   Several state and federal courts have embraced the use of *Lone Pine* orders as a case management technique to cull non-meritorious cases early.[47]

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[42] *See*, *e.g.*, *Searle Center Rep.*, *supra* note 15.

[43] *See, e.g.,* Hubbard, *supra* note 15.

[44] *Avilla v. Willits Environmental Remediation Trust*, 633 F.3d 828, 833 (9th Cir. 2011). *See also* Advisory Committee notes to 1983 Amendments to Rules 16, 26(a), 26(b), 26(g).

[45] *See Lore v. Lone Pine Corp.*, 1986 WL 637507 (N.J. Super Ct., Nov. 18, 1986).

[46] 200 F.3d 335, 338 (5th Cir. 2000).

[47] *See* Rick Faulk, *There's Nothing "New" about "Lone Pine" Orders for Active Case Management*, Washington Legal Foundation (Jul. 7, 2014); David B. Weinstein & Christopher Torres, *Managing the Complex: A Brief Survey of* Lone Pine *Orders*, 34 WESTLAW ENVT'L J. 1 (Aug. 21, 2013). *See also* STEPHEN J. CARROLL ET AL., RAND REPORT: THE ABUSE OF MEDICAL DIAGNOSTIC PRACTICES IN MASS LITIGATION 29 (2009) (recommending use of Lone Pine in "particular types of litigation once the number of cases of that type has grown sufficiently large").

In the spirit of *Lone Pine* orders, courts could schedule Rule 26(a)(2)(b) disclosures and attendant *Daubert* motions earlier in the case, especially for cases that rely on expert testimony to prove certain elements. Like *Lone Pine* orders, such a case management tool would come after the court has ruled on a motion to dismiss or the defendant has answered the complaint, but before full factual discovery. Unlike *Lone Pine* orders, which ask only for *prima facie* showings, not full expert reports, this case management tool would ask both parties to submit full Rule 26 expert reports, conduct expert depositions, and submit *Daubert* motions. Because these reports would be addressing required elements of a claim, if a court were to grant a *Daubert* motion striking a plaintiff's report, the defendant could move for summary judgment, or the plaintiff may be more willing to settle on terms agreeable to the defendant, now that the value of the claim is clearer.

The discretion embodied in the FRCP would seem to accommodate such a procedure. Rule 16(c), for example, authorizes the court to take "appropriate action" to control the timing of discovery and disclosures, and to adopt "special procedures for managing" complex cases.[48] Further, Rule 26(a)(2) allows courts to determine the schedule and sequence of expert disclosures.[49] If limited expert discovery facilitates early settlement or summary judgment, it has the potential to save millions of dollars in avoided fact discovery and preservation costs.[50]

This procedure is more feasible for expert testimony that relies on data that is likely to be in the plaintiffs' possession (or publicly available), for example tort claims based on exposure to a chemical or a defective drug. On the other hand, some experts may need access to data only available from discovery to form an opinion, and depositions and rebuttal reports may require access to evidence in the opposing party's possession. For example, some courts have refused to issue *Lone Pine* orders when plaintiffs would require access to defendants' records through normal fact discovery to comply.[51] Nonetheless, Rule 16(c) allows courts to "order the presentation of evidence early in the trial on a manageable issue that might, on the evidence, be the basis for a judgment as a matter of law."[52] Courts could limit initial factual discovery to data in defendant's possession that were needed to produce an expert report or to adequately prepare a rebuttal report or for deposition. Of course, this approach may not make sense in all cases. Judges will need to weigh the costs of bifurcated discovery—both direct, and those associated with potentially less accurate expert reports—against the benefits from increasing the likelihood, and

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[48] FRCP 16(c)(2).

[49] *See Avilla*, 633 F.3d. at 834.

[50] *See Searle Center*, *supra* note 15, (surveying fortune 200 companies and finding average discovery cost per case to range from $621,880-$2,993,567); RAND INSTITUTE, *supra* note 15, (median production costs ranging of $1.8 million); William H.J. Hubbard, *supra* note 15,(estimating a range of preservation costs of $12,000 per year for small companies and $38 million per year for the largest companies).

[51] *See Adinolfe v. United Technologies Corp.*, 768 F.3d 1161, 1168 (11th Cir. 2014); *Singleton v. Chevron U.S.A.*, 835 F. Supp. 2d 144 (E.D. La. 2011).

[52] FRCP 16(c)(2)(N).

concomitant savings, of early termination. The results suggest that the benefits may be most apparent for tort and civil rights claims. Relatedly, in light of the strong negative association between the number of *Daubert* motions and the rate of early termination, courts may also want to exercise their 16(c)(2)(D) power "to limit the use of [expert] testimony."[53]

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[53] FRCP 16(c)(2)(D).

5. CONCLUSION

This Report expands the available knowledge on *Daubert* practice in federal civil cases by examining a dataset of over 2,000 motions from 91 separate courts, spanning more than a decade. The data show that most *Daubert* motions are filed by defendants against plaintiff experts, and courts generally take between two and three months to rule on them. About 47 percent of all *Daubert* motions result in some sort of limitation on expert testimony, although defendants tend to be more successful than plaintiffs. There is no statistical relationship between the outcome of defendants' *Daubert* motions and subsequent litigation outcomes. On the other hand, the outcome of plaintiffs' motions appear related to the disposition of cases (settlement, summary judgment, or trail) and plaintiffs' litigation win rates.

Consistent with the economic theory of litigation, the longer a *Daubert* motion pends before a court, the lower the rate at which cases terminate early through settlement or summary judgment. Given the results presented in this Report, courts should avoid unreasonable delay in ruling on *Daubert* motions. Further, reasonable limitations on the use of expert testimony, and the adoption of *Lone Pine*-like procedures that encourage courts to consider *Daubert* motions early in a case, could help conserve judicial resources and reduce discovery and preservation costs.

Appendix A

Daubert Motions and Pendency Times by Court

TABLE A1
NUMBER OF *DAUBERT* MOTIONS AND AVERAGE PENDENCY DURATION:
BY FEDERAL DISTRICT COURT

Court	Number of Motions	Average Duration: Last Brief to Ruling (Days)
NY NORTH	24	253.83
NC MID	9	224.1
NY WEST	8	207.6
NY EAST	34	202.3
NM	6	197.5
IA SOUTH	6	192.2
OH SOUTH	11	163.3
GA NORTH	50	162.7
TN EAST	26	159.7
SC	11	145.4
TN WEST	10	140.1
FL NORTH	5	131.8
MD	12	130.5
OK NORTH	6	126.5
OR	21	121.7
GA MID.	16	120.6
PA MID.	19	112.3
VA WEST	8	109.5
MO WEST	19	109.4
MN	68	107.9
AZ	59	107.3
VT	3	107.3
MS SOUTH	53	106.2
MS NORTH	24	105.5
TX SOUTH	34	102.5
KS	48	102.2
HI	8	99.5
DE	26	93.92
CA EAST	14	92.5
CA SOUTH	33	92.36
NC EAST	7	91.57
GA SOUTH	6	91
NV	20	90.85
AL NORTH	51	89.48
AL MID.	14	88.71
CO	57	87.49
NY SOUTH	49	84.67
OH NORTH	20	83.68
NC WEST	6	82.2

Table A1 (Cont.)

PA WEST	22	78.59
IL NORTH	31	76.85
PA EAST	55	76.31
MO EAST	65	76.26
TX NORTH	31	75.79
NJ	37	75.14
KY EAST	22	74.55
SD	7	74.29
ME	26	73.85
WI EAST	15	73.75
AK	4	73.25
IL SOUTH	3	72.33
FL MID	76	71.83
UT	43	71.57
PR	12	70
CT U	6	69.5
IN SOUTH	31	69.41
WV SOUTH	43	66.14
TN MID.	10	65.33
TX EAST	44	63.85
MI EAST	49	61.27
OK WEST	56	60.79
KY WEST	37	60.14
CA CENT.	21	58.1
MA	12	57.25
WV NORTH	6	54.5
RI	2	53
WA WEST	30	51.63
LA WEST	48	51.26
AL SOUTH	8	51.25
WI WEST	10	51
IN NORTH	23	50.86
IL CENT	12	49.42
WA EAST	7	48.29
MI WEST	6	46.5
LA MID	9	46.44
TX WEST	17	44.59
NE	22	42.39
CA NORTH	49	40.38
AR EAST	23	39.22
FL SOUTH	69	35.86
LA EAST	46	34.53
NH	14	34.08
IA NORTH	9	31.22
DC	4	30.5
MT	6	24.33
ID	2	22.5
WY	13	19.33
ND	1	19
VA EAST	21	9.84
AR WEST	1	8
OK EAST	10	7.83

Appendix B
Case Level Cox Regressions

TABLE A2
SURVIVAL REGRESSIONS: *DAUBERT* RULING TIMING & CASE DURATION
–CASE LEVEL

	Settle as Failure			Settle or Summary Judgment as Failure		
Time From Last Brief to Ruling	.998*** (.0005)	.998*** (.0005)	.998*** (.0006)	.998*** (.0004)	.998*** (.0004)	.998*** (.0005)
Number of Motions	-	.922*** (.023)	.893*** (.026)	-	.886*** (.023)	.846*** (.028)
Year, Court, Nature of Suit	N	N	Y	N	N	Y
Wald Chi2	25.69***	37.95***	289.3***	14.57***	41.21***	274.97***
N	939	939	939	677	677	677

Estimated Cox proportional hazard ratio reported; full controls include year, nature of suit, and court effects, plus control for party and *Daubert* outcome. Robust standard errors clustered at judge level in parentheses. ***Significant at 1% level; **Significant at 5% level.

TABLE A3
COX REGRESSIONS WITH NATURE OF SUIT INTERACTIONS – CASE LEVEL

	Settle as Failure		Settle or Summary Judgment As Failure	
Time From Last Brief to Ruling	1.000 (.002)	.999 (.003)	.999 (.002)	.996 (.003)
Time X Torts	.996** (.002)	-	.998 (.002)	-
Time X Civil Rights	.996 (.002)	-	1.000 (.002)	-
Time X IP	.997 (.002)	-	1.000 (.002)	-
Time X PL /Med-Mal/Employment/Environment	-	-	-	-
Time X Contract-Other	-	1.002 (.003)	-	1.004 (.004)
Time X Contract PL	-	-	-	-
Time X Marine Torts	-	.948** (.023)	-	.915** (.036)
Time X Marine PL	-	.995 (.004)	-	.996 (.005)

Table A3 (Cont.)

Time X Motor Vehicle PL	-	.991 (.006)	-	1.012** (.006)
Time X Other Personal Injury	-	.995 (.003)	-	.995 (.004)
Time X Med Mal	-	.984** (.007)	-	.992 (.006)
Time X PL	-	.999 (.003)	-	1.003 (.003)
Time X Asbestos PL	-	.931 (.045)	-	1.003 (.003)
Time X Personal Prop. Damage	-	1.018*** (.006)	-	1.003 (.003)
Time X Property PL	-	.977** (.010)	-	.990 (.018)
Time X Other Civil Rights	-	.999 (.003)	-	1.003 (.003)
Time X Employment	-	.989** (.005)	-	1.000 (.004)
Time X Housing	-	-	-	-
Time X ADA – Employment	-	1.013 (.011)	-	1.016 (.012)
Time X ADA- Other	-	-	-	-
Time X Copyright	-	.996 (.006)	-	.999 (.006)
Time X Patent	-	.997 (.004)	-	1.003 (.004)
Time X Trademark	-	1.000 (.004)	-	1.004 (.004)
Number of Motions	.884*** (.028)	.862*** (.029)	.829*** (.029)	.804*** (.030)
Year, Court	Y	Y	Y	Y
Wald Chi2	220.35***	321.22***	226.01***	302.21***
N	821	790	577	577

Estimated Cox proportional hazard ratio reported; full controls include year, nature of suit, and court effects. PL" is "Products Liability" Robust standard errors clustered at judge level in parentheses. ***Significant at 1% level; **Significant at 5% level.

A-4

To control for potential endogeneity, a two-stage estimation process is utilized. In the first stage, the length of *Daubert* motion pendency is regressed on an instrumental variable—one that is associated with the timing of *Daubert* motions, but unlikely to be associated with likelihood of settlement or summary judgment—and the exogenous variables from the main survival equation. The number of felony filings per judge in a given district is used as an instrument; criminal filings per judge will impact a judge's time to devote to pending motions in her civil caseload (and hence *Daubert* motions), but also is unlikely to have any bearing on the likelihood that two civil parties settle at any given time.[1] Specifically, the following equation is estimated:

$$DaubertRulingTime_{it} = \alpha + \beta 1 \ FelonyFilings + \boldsymbol{BX_{it}} + u_{it},$$

where **X** is the matrix of exogenous planatory variables from the main survival equation (Defendant Motion, Motion Granted, Total Motions). The estimates are then used to calculate:

$$\delta = \hat{u}_{it} = DaubertRulingTime_{it} - \hat{\alpha} + \widehat{\beta_1}FelonyFilings + \boldsymbol{\widehat{B}X_{it}}.$$

δ captures for the portion of *DaubertRulingTime* that is unrelated to the instrument (*FelonyFilings*) and the included exogenous regressors in **X**, and hence is endogenous with the likelihood of settlement. By including *δ* as a regressor in the main survival equation, it controls for the presence of endogeneity.[2] The significance of the estimated coefficient on *δ* also acts as a test for the endogeneity of *DaubertRulingTime.* Results are reported in Table A4.[3] Both estimated hazard ratios associated with *Daubert* timing are slightly larger than one, although neither is statistically significant. However, the estimated coefficient on δ is also highly insignificant, suggesting that the hypothesis that *Daubert* timing is exogenous cannot be rejected at standard significant levels.

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[1] *FelonyFilings* is strongly correlated with *DaubertRulingTime*: F (1,1997) =18.67 (p = .0000) and t = 4.32 (p =.0000).

[2] This Control Function approach accomplishes the same goal as the more common approach of instrumental variable estimation, in which $Daubert\widehat{RulingTime}_{it} = \hat{\alpha} + \widehat{\beta_1}FelonyFilings + \boldsymbol{\widehat{B}X_{it}}$ is used in the main survival equation. The control function approach has advantages with non-linear models and also allows the simultaneous test for endogeneity based on the significance of the coefficient on *δ*. *See* JEFFREY M. WOOLDRIDGE, ECONOMETRIC ANALYSIS OF CROSS SECTION AND PANEL DATA (2012).

[3] Murphy-Topel standard errors were computed to correct for the fact that *δ* is itself an estimate. *See* Arne Risa Hole, *Calculating Murphy-Topel Variance Estimates in Stata: A Simplified Procedure*, 6 THE STATA JOURNAL 521 (2006); James Hardin, *The Robust Variance Estimator for Two-Stage Models*, 2 THE STATA JOURNAL 253 (2002).

SURVIVAL REGRESSIONS WITH CONTROL FUNCTION

	Settle as Failure	
Days From Last Brief to Ruling	1.006 (.006)	1.013 (.015)
Defendant Motion	.869 (.083)	.854 (.120)
Granted	1.014 (.077)	.925 (.088)
Number of Motions	.911*** (.022)	.900*** (.033)
δ	.993 (.006)	.986 (.015)
Nature of Suit Controls	Y	Y
Expert, Year, and Court Effects	N	Y
N	1739	1739

Notes: Murphy-Topel standard errors in parentheses; *** Significant at 1% level.

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