

**Does Tort Law Deter?**

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*Abstract*

*For nearly four decades, economic analysis has dominated academic discussion of tort law. Courts also have paid increasing attention to the potential deterrent effects of their tort decisions. But at the center of each economic model and projection of cost and benefit lies a widely-accepted but grossly under-tested assumption that tort liability in fact deters tortious conduct. This article reports the results of a behavioral science study that tests this assumption as it applies to individual conduct.*

*Surveying over 700 first-year law students, the study presented a series of vignettes, asking subjects to rate the likelihood that they would engage in a variety of potentially tortious behaviors under different legal conditions. Students were randomly assigned one of four surveys, which differed only in the legal rules applicable to the vignettes. In summary, the study found that although the threat of potential criminal sanctions had a large and statistically significant effect on subjects' stated willingness to engage in risky behavior, the threat of potential tort liability did not. These findings call into question widely-accepted notions about the very foundations of tort law.*

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## I. Introduction

Scholars have sought to divine the economic underpinnings of tort rules for at least a century, perhaps longer.<sup>1</sup> It was not until the 1970s, however, with publication of Guido Calabresi's book, *THE COST OF ACCIDENTS*<sup>2</sup> and Richard Posner's article, *A Theory of Negligence*<sup>3</sup> that economic analysis came to dominate academic discussion of tort law.<sup>4</sup> In the nearly forty years since, the literature has pursued twin aims with remarkable persistence and ingenuity—to describe tort law as a tool used to reduce tortious injuries to an efficient level, and to prescribe the most effective means by which courts might achieve that end.<sup>5</sup> In part as a result of this jurisprudence, courts too have paid increasing attention to the potential deterrent effects of their tort decisions.<sup>6</sup>

But underneath each economic model and projection of cost and benefit lies a basic and grossly under-tested assumption—that the threat of common-law tort liability in fact deters tortious conduct. Much of the law and economics literature relies on this assumption as if it were analytic truth,<sup>7</sup> a natural product of the following syllogism: People generally are rational actors, choosing their actions out of self-interest. Self-interest is economic and cost-benefit driven, and even interests not obviously economic are nevertheless quantified (if often unconsciously). By forcing internalization of costs inefficiently imposed on others, the common law of torts not only reaches an efficient result in the specific case, but also leverages the public's economic self-interest to deter future inefficient injuries.<sup>8</sup>

Particularly in the past two decades, scholars have questioned each step of this syllogism. Challenges are often doctrinal or jurisprudential—examining, for example, whether efficiency is the optimal social good or whether cost-benefit analysis accurately captures courts' and juries'

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<sup>1</sup> See, e.g., Bohlen, *The Rule in Rylands v. Fletcher*, 59 U. OF PA. L. REV. 298, 318-20 (1911) (explaining the *Rylands* case by reference to differing economic conditions in England and America); Roscoe Pound, *The Economic Interpretation and the Law of Torts*, 53 HARV. L. REV. 365 (1940) (describing a variety of economic analyses of law).

<sup>2</sup> Guido Calabresi, *THE COST OF ACCIDENTS* (1970).

<sup>3</sup> Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29 (1972).

<sup>4</sup> John C. Moorhouse, Andrew P. Morriss, Robert Whaples, *Law & Economics and Tort Law: A Survey of Scholarly Opinion*, 62 ALB. L. REV. 667, 667-68 (1998). Although law and economics still constitutes a majority share of torts scholarship, its influence arguably peaked in the 1980s, particularly with the iconic works, STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* (1987) and WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* (1987).

<sup>5</sup> E.g. LANDES & POSNER, *supra* note 4, at 23; see Howard A. Latin, *Problem-Solving Behavior and Theories of Tort Liability*, 73 CAL. L. REV. 677, 677 (1985) (“The most influential mode of torts analysis in recent decades has treated liability as a mechanism for social engineering in the sense that accident losses should be allocated to particular parties in order to induce efficient cost-minimizing behavior by similarly situated actors.”).

<sup>6</sup> W. Jonathan Cardi & Michael C. Green, *Duty Wars*, 81 S. CAL. L. REV. 671, 707 (2008); see generally Izhak England, *Law and Economics in American Tort Cases: A Critical Assessment of the Theory's Impact on Courts*, 41 U. TORONTO L.J. 359 (1991) (discussing the effect of economic theory on courts' decisions).

<sup>7</sup> See, e.g., A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 870-75 (1998); Aaron Xavier Fellmeth, *Civil and Criminal Sanctions in the Constitution and Courts*, 94 GEO. L.J. 1, 53 (2005).

<sup>8</sup> Robert D. Cooter, *Three Effects of Social Norms on Law: Expression, Deterrence, and Internalization*, 79 OR. L. REV. 1, 16 (2000).

analysis of breach.<sup>9</sup> Ultimately, however, the syllogism is an empirical proposition—and its efficacy can be tested empirically. Perhaps, for example, people are not always rational actors, but act sometimes from “reflex, habit, or snap judgment.”<sup>10</sup> Behavioral law and economists have also questioned whether self-interest is always economic and cost-benefit driven, and whether all self-interest is in fact quantified or even quantifiable.<sup>11</sup>

But it is the final step in the syllogism that has drawn the heaviest fire—the assertion that tort liability serves as a general deterrent.<sup>12</sup> There are indeed intuitive reasons to question the assertion. For example, if negligent behavior consists of an actor’s accidental disregard of moral imperatives to take reasonable care, perhaps legal incentives are superfluous.<sup>13</sup> Moreover, even

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<sup>9</sup> See, e.g., generally John C.P. Goldberg, *Twentieth-Century Tort Theory*, 91 GEO. L.J. 513, 553-60 (2003) (cataloguing theoretical arguments against deterrence-based tort theory); JULES L. COLEMAN, *RISKS AND WRONGS* 334-35 (1992); Benjamin C. Zipursky, *Sleight of Hand*, 48 WM. & MARY L. REV. 1999 (2007) (pointing out the ways in which the Learned Hand formula for breach fails to capture all aspects of reasonableness); Steven Hetcher, *Non-Utilitarian Negligence Norms and the Reasonable Person Standard*, 54 VAND. L. REV. 863, 865-66 (2001).

<sup>10</sup> William H. Rodgers, Jr., *Negligence Reconsidered: The Role of Rationality in Tort Theory*, 54 S. CAL. L. REV. 1, 16-23 (1980) (conceding that tort might deter corporations, but arguing that it does not deter individuals in part because individuals do not always act rationally); Susan Randall, *Corrective Justice and the Torts Process*, 27 IND. L. REV. 1, 50 (1993) (reviewing empirical evidence that suggests the bulk “of negligence litigation involves accidents that likely resulted from mistake or inadvertence and that do not raise questions of the morality of the injury-causing behavior”) citing NATIONAL SAFETY COUNCIL, *ACCIDENT FACTS* 2-8 (1990) and Brian Ostrom, David Rottman, & Roger Hanson, *What are Tort Awards Really Like? The Untold Story from the State Courts*, 14 Law & Pol’y, 81 (1992).

<sup>11</sup> Neil S. Siegel, *Sen and the Hart of Jurisprudence: a Critique of the Economic Analysis of Judicial Behavior*, 87 Cal. L. Rev. 1581, 1592 (1999) (quoting Amartya K. Sen, in Arjo Klamer, *A Conversation with Amartya Sen*, 3 J. Econ. Persp. 135, 147 (1989)); see generally Christine Jolls, Cass R. Sunstein, & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1477-79 (1998); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1053 (2000).

<sup>12</sup> See, e.g., Gary T. Schwartz, *Reality in the Economic Analysis of Tort Law: Does Tort Law Really Deter?*, 42 UCLA L. REV. 377, 381-87 (1994) (describing a number of “realistic objections”); John A. Siliciano, *Corporate Behavior and the Social Efficiency of Tort Law*, 85 MICH. L. REV. 1820, 1864 (1987) (arguing that tort law does not even deter corporations, let alone individuals); Troyen A. Brennan, *Environmental Torts*, 46 VAND. L. REV. 1, 6 (1993) (concluding that empirical evidence shows that environmental torts have only a weak deterrent effect); see generally THE LIABILITY MAZE: THE IMPACT OF LIABILITY LAW ON SAFETY AND INNOVATION (Peter W. Huber & Robert A. Litan, eds., 1991) (including chapters that conclude the same in products liability cases).

<sup>13</sup> Schwartz, *supra* note 12, at 382-83. At least one empirical study has shown that a fear of shame or embarrassment serves as a stronger deterrent than legal sanctions. See Harold Grasmick & Robert Bursik, Jr. *Conscience, Significant Others, and Rational Choice: Extending the Deterrence Model*, 24 LAW & SOC'Y REV. 837, 853 (1990); see also Tom R. Tyler & John M. Darley, *Building A Law-Abiding Society: Taking Public Views About Morality and the Legitimacy of Legal Authorities into Account When Formulating Substantive Law*, 28 HOFSTRA L. REV. 707, 716 (2000) (stating that individuals are motivated to follow the law because it is morally right to do so and because it is a citizen’s duty to accept legal rules and directives). There is additional empirical evidence showing that informal sanctions, administered by a parent, peer or significant other, have a deterrent effect equal to or greater than legal sanctions. See generally, e.g., Donna Bishop, *Legal and Extra-legal Barriers to Delinquency: A Panel*

if people might be influenced by threat of tort liability were they aware of the law's mandates, evidence shows that people are typically ignorant of the law—and even if aware of law's content, people commonly discount the chance of being held liable.<sup>14</sup>

There are also structural impediments to deterrence. The intervention of liability insurance likely buffers the incentive effects of tort liability.<sup>15</sup> Furthermore, jurors have limited ability to discern efficient from inefficient conduct in any consistent way, and victims' unwillingness to sue may pose an under-enforcement problem.<sup>16</sup> And these are but a few of the potential impediments to deterrence in tort cases.

Even in light of these common criticisms, based largely on untested empirical expressions, the basic empirical question remains: Does the general threat of tort liability in fact deter risky behavior? For years, the question has been largely intractable—and understandably so. An optimal study of tort law's efficacy as a deterrent would consist of an experiment involving two jurisdictions—identical with respect to demographics, economics, cultural norms, and criminal law—in which one jurisdiction was randomly chosen to impose liability for injuries caused by risky behavior, while the other would impose no such liability. Under this design, one could credibly identify whether common-law tort liability deterred risky behavior. Practical constraints, however, make such a study highly unlikely.

Alternatively, one might examine existing jurisdictions with different levels of tort liability, or a single district that has changed tort liability over time. Aside from the practical challenges of gathering data on accidents or injuries (let alone tortious behavior directly), this approach is fraught with methodological problems of identification and endogeneity—that is, it is difficult, if not impossible, to distinguish the effect of tort liability from underlying (and often unobservable) characteristics of the jurisdiction or individuals engaging in tortious conduct.<sup>17</sup>

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Analysis, 22 CRIMINOLOGY 403 (1984), Herbert Jacob, *Deterrent Effects of Formal and Informal Sanctions*, 2 Law and Policy 61(1980).

<sup>14</sup> See generally Howard Latin, “Good” Warnings, Bad Products, and Cognitive Limitations, 41 UCLA L. REV. 1193 (1994) (examining the psychological limitations on the effectiveness of products warnings and corresponding liability). Studies have shown that citizens are roundly ignorant of the criminal law and that they unreasonable discount the chances of getting caught. Paul H. Robinson & John M. Darley, *Does Criminal Law Deter? A Behavioral Science Investigation*, 24 OXFORD J. OF LEGAL STUD. 173, 174 (2004). Particularly in light of the fact that reasonableness in tort law is defined primarily by jury decisions and narrow, factually-tailored court rulings, it seems likely that the public remains ignorant of the common boundaries of reasonable care.

<sup>15</sup> PAUL C. WEILER ET AL., A MEASURE OF MALPRACTICE: MEDICAL INJURY, MALPRACTICE LITIGATION, AND PATIENT COMPENSATION 114 (1993); Schwartz, *supra* note 12, at 382-83.

<sup>16</sup> Many of the foregoing criticisms are offered by Ronen Perry, in his excellent article, *Re-Torts*, 59 Ala. L. Rev. 987 (2008) (arguing the inefficacy of deterrence by pointing out “the difficulties faced by fact-finders in implementing” economic efficiency, “potential injurers' inability to choose between negligence and non-negligence and the impact of counter-incentives on their conduct,” and “the problem of under-enforcement by actual victims”).

<sup>17</sup> See, e.g., Michelle M. Mello & Troyen A. Brennan, *Deterrence of Medical Errors: Theory and Evidence for Malpractice Reform*, 80 TEX. L. REV. 1595, 1613-14 (2002) (describing each of these difficulties in the context of deterrence research in medical malpractice); see also Theodore Eisenberg, *Measuring the Deterrent Effect of Punitive Damages*, 87 GEO. L.J. 347, 347 (1998) (noting generally “the dearth of empirical evidence in law and economics scholarship” and critiquing Kip Viscusi's article on deterrence and punitive damages along the grounds described above)

Notwithstanding such obstacles, scholars have studied a number of specific areas of tort law looking for a deterrent effect. Results are mixed. To date, no study has found that tort law serves as a comprehensive deterrent, as Landes, Posner, and Shavell have proposed. Some scholars have found limited evidence that tort acts as a weak deterrent with respect to certain behaviors. Still others have found no evidence of deterrence or even, in a few cases, a negative association—that certain tort rules are associated with an increase in related injuries. These studies are summarized in Part II, below.

In one sense, existing deterrence studies all suffer from the same limitation—they use proxies as a means of measuring the causal link between tort liability and changes in tortious behavior. The study reported in this Article attempts to overcome this limitation (albeit in exchange for others) by treating the deterrence principle as a behavioral proposition and testing it using behavioral-science methodology. Surveying 717 first-year law students, the study presented subjects with a series of vignettes, priming subjects with a brief description of applicable law and asking subjects to rate the likelihood that they would engage in a potentially tortious behavior. The study was thus an attempt to see into the minds of subjects and discover how various legal conditions might influence their risk-taking behavior. Our hypothesis was that the threat of tort liability would serve as a moderate deterrent—weaker than criminal sanctions, but stronger than a system with no tort liability or criminal sanctions at all.

Part II of this Article describes existing empirical evidence relating to deterrence. Part III relates the specifics of the study's setup and methodology. Part IV presents the study's results, and Part V discusses their implications and limitations. Part VI concludes.

## **II. A Survey of Existing Deterrence Studies**

Notwithstanding the many obstacles involved, a variety of studies have tested the deterrent effect of specific tort rules on particular populations. One group of studies has focused on the deterrent effect of legislation or administrative rules on accident-related fatalities.<sup>18</sup> The most common subject of investigation has been workers' compensation systems. In perhaps the most well-known study, Michael Moore and Kip Viscusi demonstrated that the creation of workers' compensation systems and the corresponding imposition of workers' compensation premiums on employers led to a decrease in worker fatality rates.<sup>19</sup> The study is certainly evidence that requiring companies to internalize the costs of workplace injuries reduces at least the most severe accidents. It also tells us something about the comparative deterrence of tort liability and workers' compensation systems. It is not, however, direct evidence of the base-level deterrence of common-law tort liability.

Other studies have focused on inter-jurisdictional differences in tort doctrine and have studied the association of such differences with rates of accidents or deaths.<sup>20</sup> Michelle White,

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<sup>18</sup> See, e.g., Aaron Edlin & Pinar Karaca Mandic, *The Accident Externality from Driving* (Public Law Research Paper No. 130, Univ. California, Berkeley, 1999) (examining how road fatalities might be tied to miles driven these might be reduced by appropriately designed taxes or insurance premia).

<sup>19</sup> MICHAEL J. MOORE & W. KIP VISCUSI, *COMPENSATION MECHANISMS FOR JOB RISKS* 133 (1990); see also James R. Chelius, *Liability for Industrial Accidents: A Comparison of Negligence and Strict Liability Systems*, 5 J. LEG. STUD. 293, 303-06 (1976) (finding the same).

<sup>20</sup> Several studies have also measured the deterrent effect of punitive damages specifically. W. Kip Viscusi, *The Social Costs of Punitive Damages Against Corporations in Environmental and Safety Torts*,

for instance, investigated how comparative and contributory negligence rules affect the care taken by drivers, as judged by jury verdicts in automobile accident cases.<sup>21</sup> Consistent with the predictions of law and economics, she found that drivers take less care in states with comparative fault rules than in states employing contributory negligence.<sup>22</sup>

The various doctrinal changes stemming from tort reform have also been popular subjects. Paul Rubin and Joanna Shepherd, for example, found that some aspects of tort reform—specifically noneconomic damage caps, a higher evidentiary standard for punitive damages, product liability reforms, and prejudgment interest reforms—are associated with fewer non-motor-vehicle accidental deaths, while reforms of the collateral source rule are associated with an increase in deaths.<sup>23</sup> On the other hand, Shepherd found (in a separate study) that tort reforms in the medical malpractice area are associated with increases in death rates and that such reforms harm women in particular by reducing tort judgments and increasing death rates disproportionately.<sup>24</sup> Again, although these studies are valuable, they provide only collateral evidence that the general threat of tort liability deters risky conduct.

Studies that more squarely assess the ultimate question of deterrence compare liability with non-liability—and a few such studies do exist. For example, a number of studies have found that imposition of liability on commercial servers of alcoholic beverages consistently reduces fatalities from alcohol-related motor vehicle accidents.<sup>25</sup> The most frequent topic of this type of study has been no-fault automobile compensation systems. Because no-fault jurisdictions statutorily bar negligence suits for automobile accidents, such jurisdictions provide a nice foil for judging tort's deterrent effect. The results of these studies have been mixed, with a trend toward finding that the adoption of no-fault rules is associated with an increase in motor-vehicle fatalities—thus providing some evidence that tort liability serves as some form of deterrent.<sup>26</sup>

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87 GEO. L.J. 285, 296-98 (1998) (finding no clear correlation or pattern between punitive damages and deterrence of risky behavior).

<sup>21</sup> Michelle J. White, *An Empirical Test of the Comparative and Contributory Negligence Rules in Accident Law*, 20 RAND J. ECON. 308 (1989); see also Frank A. Sloan, Bridget A. Reilly and Christoph Schenzler, *Effects of Tort Liability and Insurance on Heavy Drinking and Drinking and Driving*, 38 J.L. & ECON. 49, 49 (1995) (finding that “switching from contributory to comparative negligence increased binge drinking” and that generally “neither tort nor nontort deterrents affected the fraction of bingeing episodes after which the individual drove”).

<sup>22</sup> White, *supra* note 22, at 325-29.

<sup>23</sup> Paul H. Rubin & Joanna M. Shepherd, *Tort Reform and Accidental Deaths*, 50 J.L. & ECON. 221, 221 (2007).

<sup>24</sup> Joanna Shepherd, *Tort Reforms' Winners and Losers: The Competing Effects of Care and Activity Levels*, 55 UCLA L. REV. 905, 905 (2008); see also Albert H. Yoon, *Damage Caps and Civil Litigation: An Empirical Study of Medical Malpractice Litigation in the South*, 3 AM. L. & ECON. REV. 199, 221-23 (2001) (finding that the enactment of damage caps reduced the average recovery in medical malpractice litigation, while its nullification subsequently increased the recovery).

<sup>25</sup> FRANK A. SLOAN, EMILY M. STOUT, KATHRYN WHETTEN-GOLDSTEIN, & LAN LIANG, *DRINKERS, DRIVERS, AND BARTENDERS: BALANCING PRIVATE CHOICES AND PUBLIC ACCOUNTABILITY* x (2000).

<sup>26</sup> See Alma Cohen & Rajeev Dehejia, *The Effect of Automobile Insurance and Accident Liability Laws on Traffic Fatalities*, 47 J.L. & ECON. 357, 382 (2004) (finding an increase in fatalities of approximately 10% with the adoption of no-fault rules); J. David Cummins, Richard D. Phillips, & Mary A. Weiss, *The Incentive Effects of No-Fault Automobile Insurance*, 44 J.L. & ECON. 427, 427 (2001) (finding a significant positive association between no-fault and increased fatalities); A. Richard Derrig *et al.*, *The Effect of Population Safety Belt Usage Rates on Motor Vehicle-Related Fatalities*, 34 ACCIDENTS

Finally, a number of scholars have attempted to discover whether medical malpractice liability deters physician negligence. Studies in this area focus on two measures of deterrence: (1) evidence that doctors practice defensive medicine in reaction to rising liability insurance premiums, and (2) evidence of a decrease in error rates (based either on injuries reported or actual medical case-review) as a result of legal claims. Michelle Mello and Troyen Brennan, reviewing the literature in this area, found only “thin” evidence that medical malpractice liability deters malpractice.<sup>27</sup>

The primary limitation of all of the studies described above is that they present data on particular rules, actors, or areas of tort law. Thus, they lend incomplete and often correlative evidence of tort law’s general deterrent effect. There have been a few attempts to aggregate data as an attempt to answer the broader question. The most well-known effort was by Gary Schwartz, who in 1994 surveyed evidence of deterrence in the areas of workers’ compensation, no-fault automobile laws, medical malpractice, products liability, nonprofit and governmental agency liability, landowner liability, and New Zealand’s replacement of its tort system with a government-run injury compensation fund.<sup>28</sup> Schwartz concluded that although tort law does not result in “strong deterrence”—that is, tort law does not deter inefficient tortious behavior comprehensively and systematically—there is some evidence that it serves as a “weak” deterrent—that it deters in some situations.<sup>29</sup> The evidence underlying Schwartz’s conclusions was not primarily quantitative, however, but largely anecdotal.<sup>30</sup>

A similar investigation arose during the American Law Institute’s effort in the early 1990s to craft recommendations regarding tort reform. Don Dewees, David Duff, & Michael Trebilcock crafted a report based primarily on quantitative data from the United States and Canada in which they concluded that the common-law torts system may have some deterrent effect—strongest for automobile accidents and weakest for environmental harms.<sup>31</sup> They also concluded, however, that the effect is not sufficient to overcome the many significant defects in the tort system.<sup>32</sup>

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ANALYSIS & PREVENTION 101 (2002) (finding no significant effect); Paul Zador & Adrian Lund, *Re-analysis of the Effects of No-Fault Auto Insurance on Fatal Crashes*, 53 J. RISK & INS. 226, 235 (1986) (finding a decrease in fatalities with the adoption of no-fault rules); S. Paul Kochanowski & Madelyn V. Young, *Deterrents Aspects of No-Fault Automobile Insurance: Some Empirical Findings*, 52 J. RISK & INS. 269 (1985) (finding no significant effect); M. Elisabeth Landes, *Insurance Liability and Accidents: A Theoretical and Empirical Investigation of the Effect of No-Fault Accidents*, 25 J. LAW & ECON. 49, 50 (1982) (finding an increase in fatalities); Marcel Boyer & Georges Dionne, *Description and Analysis of the Quebec Automobile Insurance Plan*, 13 CANADIAN PUBLIC POLICY--ANALYSE DE POLITIQUES 181, 195 (1987); Frank A. Sloan et al., *Tort Liability Versus Other Approaches for Deterring Careless Driving*, 14 INT’L REV. L. & ECON. 53, 66-67 (1994) (finding an 18% increase in fatalities with the adoption of no-fault rules).

<sup>27</sup> See Michelle M. Mello, Troyen A. Brennan, *Deterrence of Medical Errors: Theory and Evidence for Malpractice Reform*, 80 TEX. L. REV. 1595, 1598 (2002).

<sup>28</sup> Schwartz, *supra* note 12, at 377.

<sup>29</sup> *Id.* at 379.

<sup>30</sup> Mello & Brennan, *supra* note 28, at 1604.

<sup>31</sup> DON DEWEES, DAVID DUFF, & MICHAEL TREBILCOCK, *EXPLORING THE DOMAIN OF ACCIDENT LAW* (1996).

<sup>32</sup> *Id.* at 413; see also Don Dewees & Michael Trebilcock, *The Efficacy of the Tort System and its Alternatives: A Review of Empirical Evidence*, 30 OSGOODE HALL L.J. 57, 131-34 (1992) (finding mixed evidence of deterrence after reviewing studies in automobile safety, malpractice, product liability, workplace injuries, and environmental harm).

Most recently, Michael Smith's 2005 study took a particularly interesting tack.<sup>33</sup> Using motor-vehicle and non-motor-vehicle fatality rates (reported by the World Health Organization's mortality database) over a period of 50 years from 113 countries as a proxy for measuring potential deterrence, Smith compared mortality rates found in different types of legal systems.<sup>34</sup> In sum, Smith found that:

Countries whose legal systems are based on English common law have motor vehicle accident fatality rates that have fallen below those in countries using French civil code systems or former members of the Soviet Union and Eastern Bloc countries; early in the period, they fell below those in German civil code systems, as well. Motor vehicle accident fatality rates in countries whose legal systems are based on Scandinavian civil codes do not differ significantly from those in common law countries. For accidents other than motor vehicle, fatality rates under common law systems have evolved to become lower than those under every type of civil code system: fatality rates from these accidents are lowest in countries whose legal systems are based on English common law, followed by French, then German, and then Scandinavian civil code countries, with the highest fatality rates occurring in former members of the Soviet Union and Eastern Bloc countries.<sup>35</sup>

Smith's study almost certainly fails to control for a host of potentially confounding variables (e.g., vastly differing cultural norms, different types of cars, population density, etc.), and using gross fatalities as a measure of deterrence poses significant limitations for the study's validity. Nonetheless, Smith has the right idea. Comparing common-law tort systems to other systems offers some glimpse into whether the background threat of common-law tort liability deters risky behavior.

One final note: There is perhaps a more extensive pedigree of empirical work on deterrence in the realm of criminal law, albeit with similarly mixed results.<sup>36</sup> As a general matter, study findings coalesce around three conclusions: (1) the mere existence of criminal law and the criminal justice system deters crime;<sup>37</sup> (2) increases in the severity or certainty of punishment alone result in only modest, if any, increases in deterrence;<sup>38</sup> and (3) increases in certainty

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<sup>33</sup> Michael L. Smith, *Deterrence and Origin of Legal System: Evidence from 1950-1999*, 7 AM. L. & ECON. REV. 350 (2005).

<sup>34</sup> *Id.* at 352-53.

<sup>35</sup> *Id.* at 353.

<sup>36</sup> See generally Daniel S. Nagin, *Criminal Deterrence Research at the Outset of the Twenty-First Century*, 23 CRIME & JUST. 1 (1998) (reviewing state of deterrence literature); Michael Tonry, *Learning from the Limitations of Deterrence Research*, 37 CRIME & JUST. 279 (2008) (discussing the divergent results of empirical studies on the effect of sanctions on criminal behavior).

<sup>37</sup> Robinson & Darley, *supra* note 14, at 173 (citing Andrew von Hirsch, Anthony Bottoms, Elizabeth Burney & P-O Wikstrom, *Criminal Deterrence and Sentence Severity: An Analysis of Recent Research* (The University of Cambridge Institute of Criminology 1, 1999); The National Academy of Sciences Panel, *Deterrence and Incapacitation* 47 (A. Blumstein, J. Cohen & D. Nagin eds. 1978)).

<sup>38</sup> Linda S. Beres & Thomas D. Griffith, *Habitual Offender Statutes and Criminal Deterrence*, 34 CONN. L. REV. 55, 59 (2001); see Isaac Ehrlich, *Crime, Punishment, and the Market for Offenses*, 10 J. ECON. PERP. 43, 55-63 (surveying the research on the question); PETER W. GREENWOOD ET AL., RAND

produce a more substantial deterrent effect than do increases in severity.<sup>39</sup> Although much of the work in this area draws from trends in actual criminal cases, Paul Robinson and John Darley have proven the value of experimental behavioral-science research of the deterrence question.<sup>40</sup> We follow their lead.

### **III. Methods**

*Survey Design:* Our central research question asks whether tort law deters risky behavior in individuals. Answering it through observation is a difficult, if not impossible, task. The first challenge is one of selection bias. Some activities pose greater risk of harm than others, which in turn influence which activities individuals chose to participate. For this reason, we cannot know whether to impute what we directly observe to the individual or the nature of the activity. Second, laws – whether established legislatively or judicially – change infrequently, creating rare opportunities to observe how people respond to different incentives or sanctions. Even when laws change and individuals appear to respond to these changes, it is often unclear whether the two phenomena are spurious or causal.

An ideal research design would observe individuals randomly placed under different tort regimes. With a sufficiently large population, any differences in individual behavior would be attributable to the legal regimes rather than to the individuals themselves. While it is impractical to design such a study, a random design is nonetheless essential to credibly measure deterrence independent of selection effects.

Our approach asks individuals how they would behave in real-world situations in which we randomize the legal regime under which they make these decisions. Our survey consists of three parts.<sup>41</sup> The first part of the survey asks a series of vignettes, each instructing respondents to imagine themselves in situations where they must decide whether to engage in potentially tortious behavior under the backdrop of a particular legal rules, or conditions. We issue four versions of the survey where the only difference among them is the legal conditions. The second part consists of thirty short questions, validated in earlier studies,<sup>42</sup> of subjects' inherent risk proclivities. The third part asks basic demographic information. We first part of the survey is

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CORP., THREE STRIKES AND YOU'RE OUT: ESTIMATED BENEFIT AND COST OF CALIFORNIA'S MANDATORY NEW SENTENCING LAWS 16 (1994) (surveying recent research supporting that increases in sentencing does not provide additional deterrence). *But see* Daniel Kessler & Stephen D. Levitt, *Using Sentence Enhancements to Distinguish Between Deterrence and Incapacitation*, 42 J.L. & ECON. 343, 343 (1999) (discriminating between deterrent and incapacitation effect and finding deterrent effect to be significant).

<sup>39</sup> Robinson & Darley, *supra* note 14, at 173; Paul H. Robinson & John M. Darley, *The Role of Deterrence in the Formulation of Criminal Law Rules: At Its Worst when Doing Its Best*, 91 GEO. L.J. 949, 953-56 (2003); Alfred Blumstein, *Prisons*, in CRIME 387, 408-09 (James Q. Wilson & Joan Petersilia eds., 1995); Frank H. Easterbrook, *Criminal Procedure as a Market System*, 12 J. LEGAL STUD. 289, 295 & n.7 (1983).

<sup>40</sup> *See generally* Robinson & Darley, *supra* note 14 (examining the sociological reasons underlying the fact that the content of criminal law does not affect deterrence); John M. Darley, Kevin M. Carlsmith, Paul H. Robinson, *The Ex-Ante Function of the Criminal Law*, 35 LAW & SOC'Y REV. 165 (2001) (studying people's knowledge of the criminal law and the effect of their relative ignorance on deterrence).

<sup>41</sup> A sample survey is appended to this article.

<sup>42</sup> *See infra* note 49 and accompanying text.

the main substantive part; the second and third part of the surveys verify randomization in our survey design.

*The Vignettes:* We asked nine vignettes to test the deterrent effect of a legal regime under a variety of different factual conditions.

They vary according to a number of dimensions, including:

1. The general type of activity involved (throwing a prototype frisbee, driving a car, providing wave runners at a lake party, working at a construction site, giving an employment recommendation, leaving a parking spot, etc.)
2. Whether the relevant act is for the purpose of pleasure or work, or is an affirmative act motivated by altruism;
3. Whether the relevant decision would create risk or would affirmatively ameliorate a pre-existing risk;
4. Whether the stated reasons to do the relevant act are compelling, weak, or vary in strength with the predilections of the subject;
5. Whether common moral norms would counsel strongly in favor of doing the relevant act, would counsel strongly against doing the act, or would vary with the subject;
6. Whether the relevant act solely involves risk to others or also risk to self—indeed, vignettes #1 and #7 are meant to isolate this factor specifically. They are identical except for a small factual change that implicates harm to self in one but not the other;
7. Whether the relevant act involves risk of injury to person, property, or solely economic injury (stand-alone emotional injury was not tested);
8. Whether the probability of potential injury (P) is high, low, or middling;
9. Whether the magnitude of potential injury (L) is high, low, or middling;
10. Whether actual criminal or tort law sanctions the relevant act;
11. Whether the relevant act involves intentional or merely negligent risk.

We include the full text of each vignette in the Appendix.

Ideally, the study would have included a larger, more diverse group of hypothetical questions representing every possible combination of these dimensions. The desire to keep the time requirements of the surveys to a manageable level, however, made this impractical. In order to keep the surveys' time requirements to an average of 10-15 minutes, we limited the number of vignettes to nine. Table 1 describes the representation of the listed variables in the nine vignettes along some of the aforementioned dimensions:

**Table 1**  
**Summary of Deterrence Vignettes Characteristics**

	<b>Purpose</b>	<b>Create/ Amelior- ate</b>	<b>Reas- ons</b>	<b>Moral Norms</b>	<b>Other s/ Self</b>	<b>Risk Type</b>	<b>P</b>	<b>L</b>	<b>Exist- ing Law</b>	<b>Intent / Negl.</b>
<b>Vignette #1 Frisbee</b>	pleasure	create	weak	vary	others	person	med	med	tort liab	negl
<b>Vignette #2 Watercraft</b>	pleasure	create	weak	vary	others	person	low	high	tort liab	negl
<b>Vignette #3 Drive Call</b>	pleasure	create	vary	vary	self	person/ property	low	high	tort liab /crim varies	negl
<b>Vignette #4 Good Samaritan</b>	altruism	ameliorate	vary	in favor	others	person	high	high	both in a few juris	negl
<b>Vignette #5 Parking</b>	work	create	strong	against	self	property	high	low	both	intent
<b>Vignette #6 Train</b>	work/ altruism	ameliorate	strong	in favor	others	person	high	high	none	intent
<b>Vignette #7 Boomerang</b>	pleasure	create	weak	vary	self	person	med	med	tort	negl
<b>Vignette #8 Forklift</b>	work	create	vary	against	self	person/ property	med	high	both	negl
<b>Vignette #9 Job Rec.</b>	work	create	weak	against	others	economic	high	high	tort	negl

Each of the vignettes concludes by asking the subject to rate the likelihood that he or she would engage in the activity described. The survey measures likelihood by use of a seven-point Likert scale, anchored at the low end (1) by “Extremely Unlikely” and at the high end (7) by “Extremely Likely.” The intermediate steps include “Moderately Likely,” “Somewhat Likely,” “Not Sure,” “Somewhat Unlikely,” and “Moderately Unlikely.” We adopt the seven-point scale for the vignettes to maintain consistency with the scale used by the risk-proclivities measure (DOSPERT) in Part 2 of the study (described below). The creators of the risk-proclivities measure chose a seven-point scale because it would result in “an increase in psychometric properties” over the five-point scales used in similar studies of risk proclivity.<sup>43</sup>

<sup>43</sup> Ann-Renée Blais, Elke U. Weber, *A Domain-Specific Risk-Taking (DOSPERT) Scale for Adult Populations*, 1 JUDGMENT AND DECISION MAKING 33, 36 (2006).

The only difference across the four types of surveys was the legal rules under which they answered the questions, which we randomly assigned. The four types of legal rules were as follows:

**Legal Conditions**

- C1 *No liability*: “There are no laws or rules against [activity], and you cannot be sued and will not have to pay for any injury caused by your doing so.”
- C2 *Criminal liability*: “You cannot be sued and will not have to pay for any injury that [activity] may cause, but there is a law against doing so that imposes a significant criminal fine.”
- C3 *Tort liability*: “There are no laws or rules against [activity], but you might be sued and might have to pay for any injury caused by your doing so.”
- C4 *No legal regime given*

The primes were meant to create a comparison of scenarios that are difficult to test using real-world data: namely, conditions in which (i) the subject knows that neither criminal nor tort liability will ensue; (ii) the subject is aware that there is no possibility of tort liability, but that there exists the possibility of criminal sanctions; (iii) the subject knows that criminal sanctions are nonexistent, but that there is the potential for tort liability; and (iv) the subject is left with his or her own understanding of the possibility of sanctions or liability, but is not prompted to consider those possibilities.<sup>44</sup>

We made the following choices in our wording of the legal primes: First, we purposely left undefined the probability and magnitude of applicable sanctions. In so doing, we allowed subjects to choose their actions based on their own estimation of these elements. Although this leaves the elements unanchored, this imprecision likely engenders a more accurate picture of subjects make real-life decision-making.

Second, we worded the criminal prime as “a significant criminal fine” was an attempt to render the dollar value of potential criminal sanctions in Condition 2 roughly comparable to the likely-presumed dollar value of potential civil liability in 3. Although necessarily a rough estimation, tort damages awarded even for lesser injuries seem likely to be comparable to (or greater than) what most subjects’ would define as “significant” criminal sanctions. Still, although “significant” remains (purposefully) a nebulous term, our intention was it to mean something more than trivial.

Third, use of the word “criminal” to describe the fines imposed for behaviors described in the vignettes was purposeful, even if not technically accurate. Such fines are often not referred to as “criminal” in the legal lexicon, but rather are more commonly known as “quasi-criminal” or “civil” fines.<sup>45</sup> We thought it likely that subjects would be unfamiliar with this distinction. (Indeed, the authors are themselves unsure that any principled distinction exists.) In addition, we

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<sup>44</sup> Although we considered using a fifth survey imposing both criminal and tort sanctions, we concluded that the benefit of learning the effect of combined deterrence did not justify the additional subjects required to achieve sufficient power for five surveys rather than four.

<sup>45</sup> Although courts and statutes frequently differentiate between civil and criminal fines, the substance of the distinction has also been found to be meaningless in certain contexts. *See, e.g.,* United States v. Halper, 490 U.S. 435 (1989) (overturning civil fine, after defendant had already been ordered to pay a criminal fine, for violation of the double jeopardy clause of the Fifth Amendment).

described the fines as “criminal” in order to capture the moral dimension that many members of the public associate with criminal versus non-criminal responsibility.<sup>46</sup>

Fourth, we included a fourth survey, with no legal prime, out of concern that the mere act of priming subjects might skew the accuracy of the study. This would be true if it were the case that people do not consciously consider the possibility of legal sanctions when acting in a way that creates or exacerbates risk. The inclusion of a survey without a legal prime more likely captures test subjects’ natural decisionmaking process, rather than in direct response to external cues.

Fifth, we chose to make the imposition of sanctions probabilistic but undefined in survey types 2 and 3. Whereas Condition 2 says “there is a law against doing so that imposes a significant criminal fine,” Condition 3 says “you might be sued and might have to pay for any injury caused by your doing so.” The difference in this language represents a difficult choice. On the one hand, the language “might be sued” arguably poses a lower probability of liability than the language used to describe the possibility of criminal sanction. A lower probability of sanction might lead to a lower measure of deterrence unrelated to the inherent deterrent power of tort versus criminal liability.<sup>47</sup> On the other hand, analogous language in the criminal context might have introduced a different distortion. Adding language to Condition 2 such as “you might be caught,” or “might be prosecuted” evokes images of the subject as fugitive—a powerful construct that might unduly enhance the threat of criminal sanction.<sup>48</sup>

Each subject was exposed – randomly – to only one type of legal prime. This method prevented us from observing how a single individual responds to different legal primes but allows comparisons across groups of subjects assigned different primes. The concern with giving sets of identical vignettes with different legal primes to individual subjects was that it might cause subjects to think that they ought to answer each question differently. This would run the risk of creating a deterrent effect by suggestion. The chosen study design avoided this risk.

*The Risk-Proclivities Measure:* The second part of the surveys consisted of a measure of risk-taking proclivities that has been widely used and validated in the social-science community.<sup>49</sup> The measure is called The Domain Specific Risk-Taking (DOSPERT) Scale and was developed by Elke Weber and her colleagues at the Center for Decision Sciences at Columbia University.<sup>50</sup> The measure consists of thirty short prompts describing a variety of risky behaviors, such as “Going whitewater rafting at high water in the spring” and “Betting a day’s income at a high-stake poker game.” The behaviors represent five general types of risk—ethical, financial, health/safety, social, and recreational—each identified as distinct forms of risk in the social-

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<sup>46</sup> See Nagin, *supra* note 37, at 4-5 (describing research finding that punishment deters only to the extent that it creates social stigma).

<sup>47</sup> Still, inherent in the language of Survey #2 is the common understanding that one typically is unlikely to be caught and held criminally responsible for most behaviors of the type described in the vignettes.

<sup>48</sup> In hindsight (that is, during data collection), we concluded that language such as “for which you might be held responsible” might have struck a better balance in Survey #2. Thus, we created a new version of Survey #2 and assigned it to a new group of torts students at Villanova. Our thanks to Professor Michael Moreland at Villanova for his aid in this regard. Our results suggest that [complete]

<sup>49</sup> See *supra* note 44, at 34 (“The scale has been used and validated, and its factor structure replicated in a wide range of settings and populations (see <https://decisionsciences.columbia.edu/dospert/index.htm>).”).

<sup>50</sup> [https://vlab2.gsb.columbia.edu/decisionsciences.columbia.edu/index.php?page=dospert\\_scale](https://vlab2.gsb.columbia.edu/decisionsciences.columbia.edu/index.php?page=dospert_scale).

science literature.<sup>51</sup> The measure asks subjects to rate the likelihood that they would engage in the activities according to the seven-point Likert scale described above. Previous studies using the DOSPERT have reported Cronbach alphas ranging from .71 to .86, and scale intercorrelations varied from .08 to .66.<sup>52</sup>

The risk-taking measure serves two primary purposes in this study. The first purpose is to test the study's external validity—that is, to test whether the results are generalizable to the broader population. The second purpose is to control for between-individual differences in risk proclivity. In other words, it provides a means of testing whether any found effect of the experimental conditions (the four legal primes) was due to random differences in the inherent risk proclivities of the samples.

*Demographic Questions:* The final part of the surveys collected subjects' demographic information. The questions included standard items such as gender, age, race, education, and income. With regard to income, because it was a student population the query was phrased in the following way: "What is your total annual household income, including all earners in your household? If you are a student, what is the approximate annual household income of the family with whom you were raised?" This wording was an effort to capture the economic status that is most likely to influence subjects' risk-related values. Because most students' income is zero or (counting student loans) at or below poverty-level, family income likely provides a more accurate measure of class status.

Surveys also asked subjects how long they have lived in the United States. The purpose of this question was two-fold. First, it provides a basis from which to judge subjects' inculcation with the background influence of the American legal system. Second, the deterrent effect of tort law might vary according to differences in cultural norms—length of time lived in the United States serves as a proxy for such differences.

The surveys also asked whether subjects have "attended and completed at least one semester of law school" and whether they have been involved in litigation. These questions stemmed from the theory that specific training or experience in the law might well influence the deterrent effect of tort liability.

*Survey Participants:* We invited first-year students from thirteen law schools to participate in our study: Indiana (Indianapolis), Iowa, Kansas, Kentucky, Roger Williams, Texas Tech, Georgia, New York University, North Carolina, Vanderbilt, Wake Forest, Washington and Lee, and West Virginia. Our point of contact came from the students' first-year torts professors. Their participation was voluntary and their responses strictly anonymous. In an attempt to isolate the study's results from the potential influence of specific knowledge or training in tort law, the vast majority of students took the survey prior to or during their first torts class. We allowed students up to one month to complete the survey, however, and a small number of them completed it within this window.

We assigned surveys according to the first letter of subjects' last name: A-D, E-K, L-R, and S-Z. We determined the number of letters in each bin by division of several phone books into four parts. The surveys were anonymous. Neither the students' professors nor the researchers

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<sup>51</sup> Blais & Weber, *supra* note 43, at 34.

<sup>52</sup> *Id.* at 38.

had a way of matching subjects' identities to their surveys, or even of learning generally which students took the survey and which did not.<sup>53</sup>

None of the questions in the surveys were mandatory. One result of this was that occasionally questions were not answered, although we did not detect any pattern in the questions left unanswered. Predicting this, the researchers nevertheless concluded that it would be better to have some holes in the data rather than to risk subjects refusing to complete whole surveys because of an objection to particular questions.

The surveys were administered using SurveyMonkey, a subscription web service that provides tools for building and administering surveys and for storage and summary analysis of the resulting data.<sup>54</sup> Subjects were given a link to one of the surveys residing on SurveyMonkey site via email or postings on course websites.

In total, 717 students participated in the survey. Subjects took an average of 10-13 minutes to complete the survey. The respondents included 381 men and 336 women. A majority (56%) reported an age range of 21-23 years, and over 95 percent were below age 30. Participants were legal residents of forty-eight states (with the exception of Colorado and North Dakota) and the District of Columbia, and there were ten foreign residents. Approximately 18% of respondents reported as non-white (comprising of African-American, Hispanic, Asian/Pacific Islander, Native American, Other, and Not Known). Approximately half of the respondents reported household income between \$50,000 and \$150,000. While each of the tiers of the *U.S. News and World Report* was represented in the sample, a slight majority (55%) of responses came from Top 50 schools. Table 2 reports the distribution of key demographic variables for the sample.

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<sup>53</sup> Ideally, the order of the first nine questions of each survey would have been randomized. Unfortunately, SurveyMonkey did not offer this feature at the time.

<sup>54</sup> See [www.surveymonkey.com](http://www.surveymonkey.com).

Table 2  
Demographic Characteristics of the Sample

Variable	Outcome	<i>N</i>	Percentage
Gender	Male	381	53.1%
	Female	336	46.9%
Race	White	590	82.3%
	Non-White	127	17.7%
Household Income	0\$ - \$49,000	119	16.6%
	\$50,000 - \$99,000	180	25.1%
	\$100,000 - \$149,000	160	22.3%
	\$150,000 - \$199,000	72	10.0%
	≥ \$200,000	163	22.7%
Law School Tier	Top 25	143	19.9%
	Top 26-50	250	34.9%
	Top 51-75	116	16.2%
	Top 76-100	18	2.5%
	3 <sup>rd</sup> Tier	171	23.8%
	4 <sup>th</sup> Tier	19	2.6%

#### IV. Results

*Validation of Random Assignment:* Table 3 provides summaries of relevant covariates with respect to each of the four legal regimes. For each of the four legal regimes, we report the mean DOSPERT score, the percentage female, the percentage White, and the percentage having a household income of \$200,000 or greater. To formally evaluate whether the outcomes of these four covariates demonstrated a statistically significant dependence of legal regime, we conducted a one-way ANOVA for the DOSPERT score (dependent variable was DOSPERT score and independent variable was legal regime) and a chi-square test of independence for the other categorical covariates (gender, White vs. Non-White, household income < \$200,000 vs. household income ≥ \$200,000). The relevant *p*-value associated with the test of each null hypothesis is reported under the column labeled Significance. For all covariates except gender (% Female), there were not statistically significant differences across the four legal prime conditions indicating that we do not reject the null hypothesis that the four different groups are meaningfully different from one another. In other words, in every respect but gender, each of the four survey groups is similar—our randomization process worked.

For gender, however, there was a statistically significant difference across the four legal prime conditions, indicating that we reject the null hypothesis of equal percentage females across the four groups. Examining the percentage of females across the four conditions, we see that conditions R3 and R4 had relatively low percentages of females.

Table 3  
Summary Covariate Values as a Function of Legal Prime Condition

Variable	C1 No Liability	C2 Criminal Liability	C3 Tort Liability	C4 No Prime	5 Significance
Mean DOSPERT	3.43	3.39	3.47	3.44	$p = .706$
% Female	49%	53%	43%	40%	$p = .045$
% White	81%	83%	80%	85%	$p = .588$
% HHI > 200k	27%	23%	18%	26%	$p = .196$

*Note.* The statistically significant result associated with % Female ( $p = .045$ ) was attributable to relatively low percentage of females in conditions R3 and R4. A chi-square goodness of fit test evaluating the null hypothesis of equal percentage of males and females was not statistically significant for conditions C1 ( $p = .773$ ), C2 ( $p = .334$ ), and C3 ( $p = .053$ ), but was significantly significant for condition C4 ( $p = .014$ ).

*Effect of the Legal Prime Condition on Deterrence:* As discussed above, the vignettes ask respondents how they would behave in a series of activities, which themselves vary along multiple dimensions (e.g., nature of activity, type of harm, etc.). Table 4 presents the mean response of the subjects for each of the four legal conditions. We performed a simple one-way ANOVA (where the legal regime is the fixed factor) for each vignette, reporting the significance level and partial eta-squared (a measure of effect size for the omnibus ANOVA effect). These results tell us whether there is an effect somewhere between the means of each vignette by legal regime. It does not directly inform the effect of each pair of conditions, which we address in the subsequent table. The partial eta-squared measure gives the effect size of the contribution of the legal regime, taken as if it were the only variable of interest. In interpreting this measure, values less than 0.06 are small, values between 0.06 and 0.19 are medium, and values greater than 0.22 are large.

Table 4  
Omnibus Effect of Legal Prime on Deterrence Outcomes

Item	C1 No Liability	C2 Criminal Liability	C3 Tort Liability	C4 No Prime	5 Significance	6 Partial Eta-Square
1. Frisbee	3.24 (1.99)	1.95 (1.36)	2.74 (1.80)	2.72 (1.80)	.000	.074
2. Watercraft	3.79 (2.04)	2.50 (1.66)	3.31 (1.94)	2.78 (1.92)	.000	.069
3. Drive Call	6.28 (1.47)	4.28 (2.14)	6.28 (1.32)	6.26 (1.31)	.000	.236
4. Good Samaritan	2.13 (1.68)	2.00 (1.64)	1.97 (1.38)	2.02 (1.58)	.789	.001
5. Parking	4.06 (2.15)	3.62 (1.99)	3.76 (2.02)	3.23 (2.00)	.003	.020
6. Train	5.75 (1.53)	5.35 (1.63)	5.71 (1.34)	5.76 (1.21)	.015	.015
7. Boomerang	3.01 (1.89)	2.04 (1.41)	2.67 (1.70)	2.84 (1.78)	.000	.049
8. Fork Lift	3.27 (1.80)	2.86 (1.77)	3.36 (1.88)	2.80 (1.73)	.005	.018
9. Job Rec.	3.46 (1.80)	2.94 (1.69)	3.46 (1.67)	3.14 (1.61)	.005	.018

We briefly summarize the results:

*Vignette 1: Dangerous Frisbee:* In the first question, we asked respondents to throw a metal Frisbee with thinner-than-average edges in a public park, aware of the greater potential risk of harm. Condition 1 (no liability) respondents were most inclined to throw the Frisbee, while Condition 2 (criminal liability) were least inclined. Respondents facing only tort liability and those not primed to think about liability gave similar responses.

*Vignette 2: Watercraft without Life Vests:* We then asked respondents, owning a lake house, their willingness to allow their guests to ride their wave-runners without providing life vests. The pattern of response was similar to Vignette 1, in that respondents were most likely to allow this activity if informed they faced no liability (Condition 1), and least likely to allow the activity if

informed criminal liability (Condition 2). Respondents told of tort liability fell between these extremes.

*Vignette 3: Using Cell Phone While Driving:* When asked whether they would be willing to use a cell phone while driving to make a social call, all groups expressed an inclination to do so. The group least inclined to make the call were respondents told of potential criminal sanctions (Condition 2).

*Vignette 4: Good Samaritan for Injured Driver:* Respondents were asked whether, as an off-duty Emergency Medical Technician late to work, they would drive past an injured motorcyclist. The strong consensus is that they would help the motorist, irrespective of the legal prime.

*Vignette 5: Bumping a Parked Car to Get out of Parking Space:* Respondents were asked, if squeezed in a parallel parking space in which the adjacent cars gave them a few inches of space, they would bump the other cars. Again, respondents told they would face no liability (Condition 1) for doing so were most inclined to do so. Respondents from the other legal regimes were each less inclined to do so and produced similar average responses.

*Vignette 6: Train Switch:* In the classic moral dilemma first posed by Philippa Foot,<sup>55</sup> respondents were asked whether, as a train conductor faced with a runaway train, they would throw a switch so the train would kill one person at one station or do nothing and allow the train to kill several persons at another station. While all groups expressed a strong willingness to throw the switch, the group least inclined were respondents told they would face potential criminal liability for doing so (Condition 2). Respondents told of potential tort liability (Condition 3) gave comparable responses to those told they faced no liability (Condition 1) or give no legal prime (Condition 4).

*Vignette 7: Dangerous Boomerang:* In a question similar to Vignette 1, respondents were asked their willingness to throw a boomerang, made of metal (rather than wood or plastic) with thinner-than-average edges, in a park. Once again, respondents told of potential criminal sanctions (Condition 2) were least likely to engage in the activity, while respondents from the other three regimes were more willing to do so and gave similar responses.

*Vignette 8: Operating Heavy Machinery at Work while Medicated:* Here, we asked whether respondents, feeling the effects of an over-the-counter cold medication, would operate a forklift in an urban construction site. Respondents across all four legal regimes expressed a general reluctance to do so, but interestingly respondents told of potential tort liability (Condition 3) were the most likely, comparable to respondents told they would face no liability (Condition 1) and more likely than those told of criminal liability (Condition 2) or given no prime (Condition 4).

*Vignette 9: Job Recommendation:* Finally, respondents were asked whether they would provide a recommendation for a former employee for whom they recalled – but were not certain – often showed up late for work. Not surprisingly, respondents facing potential criminal liability (Condition 2) were

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<sup>55</sup> Philippa Foot, *The Problem of Abortion and the Doctrine of the Double Effect*, in *VIRTUES AND VICES AND OTHER ESSAYS IN MORAL PHILOSOPHY* 19 (1978).

least reluctant to proffer this information, but surprisingly, respondents facing potential tort liability (Condition 3) were, on average, equally likely to provide this information as respondents told they would face no liability whatsoever (Condition 1).

With the exception of Vignette 4 – the Good Samaritan – there was a statistically significant difference across the four response groups. In other words, the legal rule to which respondents told they were subjected influenced how respondents answered each question. For several – Vignettes 4 through 9 – of the vignettes, however, the partial eta squared values fell below 0.06, suggesting that overall contribution of the legal rules is small.

For each of the vignettes, the respondents *least* inclined to engage in the activity were those told of potential criminal liability (Condition 2). In contrast, for 7 out of 9 vignettes, respondents *most* inclined to engage in an activity were told they would not face any liability for doing so (Condition 1). In several of the vignettes, however, the difference in average response between Condition 1 respondents and respondents from other legal regimes was small and statistically non-significant.

While respondents told of potential tort liability (Condition 3) were consistently more willing to engage in activities than respondents told of potential criminal liability (Condition 2), in some instances the differences were small and statistically not significant, as in the case of the car parking example. In contrast, in some instances potential tort liability did not appear to deter respondents from participating in the activity, compared with those who were told they would face no liability, as in the case of giving an unfavorable job recommendation.

*Pairwise Comparisons of Responses:* Table 5 contains the Cohen's  $d$  values for each pair of legal regimes, along with an indication of whether the difference is statistically significant within the context of the Tukey Test (honestly significant difference), denoted by a "\*" for statistical significance at the  $p < 0.05$  level. The value of Cohen's  $d$  is obtained by dividing the difference in the group means by the square root of the mean squared error term of the one-way ANOVA conducted as reported in Table 4. This value reflects the effect size for each pair and is interpreted as the number of standard deviations between the two means. For example, a  $d$  value of 0.74 means that the two condition means are 0.74 standard deviations apart. In general, a  $d$  equal to less than 0.5 reflects a small effect, 0.5-0.8 reflects a moderate effect, and a value of  $d$  greater than 0.8 reflects a large effect.<sup>56</sup>

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<sup>56</sup> In essence, the sign is usually ignored (the sign just reflects which condition has a higher mean).

Table 5  
Pairwise Effect Sizes for Deterrence Outcomes

Item	Condition 1 vs. 2	Condition 1 vs. 3	Condition 1 vs. 4	Condition 2 vs. 3	Condition 2 vs. 4	Condition 3 vs. 4
1. Frisbee	0.74*	0.29*	0.30*	-0.45*	-0.44*	0.01
2. Watercraft	0.68*	0.25	0.54*	-0.43*	-0.15	0.28
3. Drive Call	1.22*	0.00	0.01	-1.22*	-1.21*	0.01
4. Good Samaritan	0.08	0.10	0.07	0.02	-0.01	-0.03
5. Parking	0.22	0.15	0.41*	-0.07	0.19	0.26
6. Train	0.27*	0.03	-0.01	-0.25	-0.28*	-0.03
7. Boomerang	0.57*	0.20	0.10	-0.37*	-0.47*	-0.10
8. Forklift	0.23	-0.05	0.26	-0.28*	0.03	0.31*
9. Job Rec.	0.31*	0.00	0.19	-0.31*	-0.12	0.19

*Notes.* Condition 1=no tort or criminal liability; Condition 2=criminal liability; Condition 3=tort liability; Condition 4=no prime. Positive numbers mean that the second condition deterred more than the first. Negative numbers mean that the first condition deterred more than the second. An asterisk indicates that the result was statistically significant at the .05 level.

Tables 4 and 5, viewed together, suggest that criminal liability deterred more than any of the other primes, including threat of tort liability. When told of potential criminal liability (Condition 2), respondents in each vignette were less willing to engage in the given activity than respondents told they would face no sanctions (Condition 1). In 6 of the 9 vignettes, these differences were statistically significant and the effects were generally quite large. In a pairwise comparison of criminal versus tort liability (Condition 2 versus Condition 3), respondents in the former group were less willing to engage in the given activity than the latter group in eight of nine vignettes, with six of these differences statistically significant.

In contrast, the threat of tort liability had little to no deterrent effect. Although in 6 of 9 vignettes, respondents told of potential tort liability (Condition 3) posted slightly lower Likert scores than those responding to the no liability prime (Condition 1), these differences were small and, in all but one vignette, statistically non-significant. Only with respect to the Frisbee vignette did tort liability have a statistically significant, albeit weak, deterrent effect. Nor did potential liability have any relative deterrent effect when compared with the no prime condition (Condition 4). To the contrary, in 6 of 9 vignettes, respondents were less willing to engage in the activity under the no prime condition than under threat of tort liability, although this result was only statistically significant with regard to the Forklift vignette.

The inclusion of the group not primed with any legal regime (Condition 4) provides some insight into the different levels of deterrence for criminal and tort. Respondents proved somewhat less likely to engage in risky activity when given no prime (Condition 4) than when instructed that they would not be held liable criminally or in tort (Condition 1). In other words, respondents left to their own un-primed judgments about the risk of liability were somewhat more deterred than those expressly exempted from liability. This baseline level of willingness changed in response to potential criminal, but not tort, liability. Although threat of criminal liability generally had a greater deterrent effect than the no prime condition, the no prime condition was a more powerful deterrent than threat of tort liability.

Because the vignettes examine multiple dimensions of risk – e.g., the given activity’s purpose; type, scope and probability of harm; and potential conflict with existing norms – we

have examined each separately. For this reason, it is unsurprising that responses across legal conditions vary considerably within individual questions as well as across. We make, however, a few general comments.

First, while responses for given vignettes varied – often significantly – depending on the legal condition, the overall pattern across vignettes for each of the four conditions was similar. For example, in both the Frisbee and Watercraft vignette, respondents expressly told of no liability (Condition 1) were most likely to engage in the activity, and respondents told of criminal liability (Condition 2) were the least likely. Each group (condition), however, was *more* willing to allow someone without a life vest to use their watercraft than throw a metal Frisbee.

Irrespective of the legal condition, respondents expressed a similar willingness to flip the switch to minimize the number of fatalities from a runaway train (Vignette 6). Conversely, respondents from all four conditions expressed a nearly identical reluctance, as an off-duty EMT driver, to drive past an injured motorcyclist (Vignette 3). The similarities across groups in these vignettes suggest that, in certain situations, moral norms or perhaps inchoate human instinct override legal rules. One exception to this was using a cell phone while driving (Vignette 3). Three of the four groups expressed a strong and nearly identical willingness to engage in this activity. Individuals told of criminal sanctions (Condition 2) were markedly less willing – but still willing nonetheless – to use the cell phone while driving. This finding is consistent with the view that some behavior is difficult to change in the absence of severe sanctions. In this vignette, people may be willing to pay a fine to use their cell phone, but not have a criminal conviction on their record.

*Moderating Effects of Individual Characteristics:* We briefly explore whether the effect of legal regime on responses to the vignettes (described above) were dependent on (or moderated by) individual demographic characteristics. Because we were able to validate the randomization by these individual characteristics (*see infra*), large differences in responses can be credibly imputed to these characteristics. With the few exceptions noted below, the effects of the legal condition were independent of these demographic characteristics.

*DOSPERT Score:* One question that arises is what better predicts individuals' responses: legal conditions or general risk proclivity (DOSPERT) score. We regressed each individual's average response separately on legal conditions and on overall DOSPERT score and then together with full interactions. We found that the coefficients for each remained consistent across the different specifications. Controlling for DOSPERT score did not change the effect of legal condition. Similarly, the effect of legal condition did not depend on the overall DOSPERT score. This result held for the full interaction model, meaning that the effect on condition does not depend on whether the individual scored high or low on the DOSPERT score). Put differently, respondents were similarly affected by the various legal conditions regardless of whether they were inherently risk-seeking, risk-neutral, or risk-averse.

*Male v. Female:* To examine the moderating effect of gender (i.e., male or female), we ran an ANOVA that included regime and gender as fixed factors, and the interaction term (interaction of regime and gender) that reflected whether the responses by regime were moderated by gender. Across all nine deterrence items, the interaction term was statistically non-

significant, with the exception of Drive Call (Vignette 3), for which the moderating effect was statistically significant but small.<sup>57</sup>

*White v. Nonwhite:* As with *male v. female*, we ran the same ANOVA with respect to race. Across all nine deterrence items, there was a non-significant interaction term (indicating that the effect of legal prime was not different for white and nonwhite).

*Income:* We asked respondents to report their income in the following five categories: \$0-\$49,999; \$50,000-\$99,999; \$100,000 - \$149,999; \$150,000 - \$199,999; and \$200,000 or more. With the exception of one vignette, responses within each regime did not meaningfully vary by income. For the one vignette where differences emerged – Vignette 4, acting as a Good Samaritan to an injured driver – the difference was statistically significant but small.<sup>58</sup>

## V. Discussion

As described above, the most statistically powerful finding of this study was the deterrent effect of criminal sanctions. The threat of a criminal fine significantly reduced respondents’ willingness to engage in the behaviors described in the vignettes. That criminal sanctions would deter risky conduct is not particularly surprising. Previous studies have also shown that the existence of criminal law has a deterrent effect on criminalized behavior.<sup>59</sup> The strength of the Crim Survey’s deterrent effect, however, is somewhat unusual—previous research has shown criminal sanctions to have only a moderate deterrence effect.<sup>60</sup>

Two aspects of the study might explain the criminal prime’s strength as a deterrent. First, description of the sanction as a “significant criminal fine”—nebulous, but potentially large—may have caused the threat to loom large in the minds of participants, thus resulting in greater than average deterrence. On the other hand, in prior studies the size of criminal sanctions (as opposed to the certainty of sanctions) made little difference in their deterrent effect.<sup>61</sup> Instead, perhaps the act of priming, itself, explains the size of the effect. Unlike most other investigations of criminal deterrence, the Crim Survey primed subjects to consider possible sanctions before

<sup>57</sup> For Vignette 3 (Drive Call), the partial eta-squared was .011 (very small), and the conditional means were:

<u>Ethnicity</u>	<u>Regime 1</u>	<u>Regime 2</u>	<u>Regime 3</u>	<u>Regime 4</u>
Male	6.53	4.67	6.27	6.22
Female	6.03	3.94	6.30	6.31

The effect seems to be related to a very high mean for nonwhites for Regime 1.

<sup>58</sup> For Vignette 4 (Good Samaritan), the partial eta-squared was .037 and produced the following conditional means:

<u>Income</u>	<u>Regime 1</u>	<u>Regime 2</u>	<u>Regime 3</u>	<u>Regime 4</u>
\$0-\$49,999	2.17	1.85	2.50	1.84
\$50,000-\$99,999	2.06	2.10	1.67	1.85
\$100,000-\$149,000	2.09	1.55	1.91	2.46
\$150,000-\$199,999	2.74	1.32	1.79	2.50
\$200,000 or more	2.04	2.46	2.00	1.71

<sup>59</sup> See *supra* notes 36 to 40 and accompanying text.

<sup>60</sup> *Id.*

<sup>61</sup> *Supra* note 39 and accompanying text.

deciding whether to act. It seems likely that many (if not most) real-world decisions with regard to risky behavior are made without conscious consideration of potential criminal sanctions. Prompting subjects to consider such sanctions might therefore have strengthened the deterrent effect.

That subjects were primed to consider possible sanctions might also explain the finding that criminal sanctions (Condition 2) had a significantly stronger deterrent effect than did the absence of any discussion of sanctions (Condition 4). Although Condition 4 respondents might have presumed (consciously or unconsciously) that they might be subject to criminal and civil liability as a result of risky behavior, being primed to consider criminal sanctions in the context of the Crim Survey might have strengthened the sanctions' influence.

Finally, it is also not surprising that the potential criminal sanctions (Condition 2) deterred risky conduct more than tort sanctions (Condition 3). The social stigma that accompanies criminal sanction might alone explain the difference. Several psychological biases—discussed below—might also play a role in this result.

The study's most surprising and provocative finding is the Tort Survey's failure to deter. Recall that subjects proved just as likely to take risks when primed that they might be sued and might have to pay damages (Condition 2) as when they were told expressly that they could not possibly suffer criminal or civil consequences (Condition 1). This finding is counterintuitive. It contradicts not only the study's hypothesis, but also the decades-old contrary assumptions of judges, policy-makers, and academics. Moreover, the finding even belies self-reports of the study's participants. Students at the University of Kentucky and the University of Toronto reported (after having participated in the study) that they had expected to be proven less likely to engage in risky behavior in the face of potential tort liability than in its absence.<sup>62</sup> The study's results, of course, reveal this intuition to be inaccurate.

Like much empirical work, the data from the study does not provide an explanation for the study's results. Further study is necessary in order to tease out the relevant causal relationships. The following subsections, however, explore some potential explanations.

*Explanation 1. Tort Law Does Not Deter:* One possible interpretation of the study's results is to take them at face value, as evidence that tort law simply does not deter. Indeed, such a conclusion would be consistent with some attempts to measure tort's deterrence effects. As discussed in Section II, although some studies have found tort law to be a weak deterrent, others have found no deterrent effect at all.<sup>63</sup> One may resist such a conclusion because it contradicts rational actor theory—the belief that the threat of financial consequences should, at the margins, reduce the risk-taking behavior of rational actors. But psychologists, sociologists, and behavioral economists have begun to explore the considerable limitations of rational actor theory, offering evidence that a variety of well-documented psychological phenomena cause

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<sup>62</sup> At the time of the study, one of the authors was a professor at the University of Kentucky. It is notable that the ten year old daughter of one of the authors correctly predicted the study's outcome. Mia Cardi explained that "People do the right thing because they feel that it is right, not because they might have to pay money for their mistake." Mia would have made a better principal investigator for this study than her father.

<sup>63</sup> See *supra* notes 18 to 35 and accompanying text.

people to act in ways not predicted by conventional law and economics.<sup>64</sup> This literature helps to explain the results of this study.

The tort condition's failure to deter risky conduct may be rooted in the salience respondents attached to sanctions. Existing social science literature tells us that the certainty of sanctions plays a strong role their effectiveness as a deterrent—the more certain the sanctions, the stronger their deterrent effect, and vice versa.<sup>65</sup> Two cognitive phenomena may have led the subjects of this study to believe the certainty of tort sanctions to be low. The first is known as “egocentric bias.” Three decades of empirical research has shown that people generally lack sufficient metacognitive insight, including the tendency to overestimate their own abilities and to underestimate their chances of becoming injured or of injuring others.<sup>66</sup> In the context of this study, such egocentric bias might have led subjects to discount the probability that the behaviors described in the vignettes would lead to injury and hence to liability. If subjects perceived the risk of injury to be low, then the prospect of tort sanctions would have been uncertain—and if uncertain, then the sanctions were capable of serving only as a weak deterrent, at best.<sup>67</sup>

Subjects might also have underestimated the chance of being sued and, if sued, of having to pay damages. The “availability heuristic” is a general cognitive bias by which people are more likely to see an event as foreseeable if they are able easily to recall similar events, either from personal or common experience.<sup>68</sup> Very few of this study's respondents had ever been involved in civil litigation. Thus, the availability heuristic predicts that subjects may have discounted the possibility of tort liability. Again, the less certain is the threat of liability, the weaker its potential strength as a deterrent. By contrast, although this study did not test specifically for it, it seems likely that many more participants had experienced some form of criminal fine, most likely for traffic violations. Thus, the availability heuristic also predicts that subjects would have been deterred more strongly by threat of criminal sanction.

It is possible that a combination of the egocentric and availability biases drove the deterrent effect of tort liability to a sub-significant level.<sup>69</sup> Nevertheless, even in light of these biases the non-significant deterrent effect of tort liability was surprising. Thus, perhaps some additional explanation is necessary.

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<sup>64</sup> See generally JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (1982) (Daniel Kahneman, Paul Slovic, Amos Tversky, eds.) (collecting research on cognitive bias in risk assessment); Cass R. Sunstein, *Behavioral Analysis of Law*, 64 U. CHI. L. REV. 1175 (1997) (discussing the effect of various decision making behaviors and their implications for law and policy) .

<sup>65</sup> See *supra* note 39 and accompanying text; see also Daniel Shuman, *The Psychology of Deterrence in Tort Law*, 42 KAN. L. REV. 115, 121 (1993) (recognizing that deterrence is achieved only when certainty of punishment reaches sufficient level).

<sup>66</sup> See, e.g., Joyce Ehrlinger & David Dunning, *How Chronic Self-Views Influence (and Potentially Mislead) Estimates of Performance*, 84 J. PERSONALITY & SOC. PSYCH. 5, 5-7 (2003) (explaining egocentric bias and citing metastudies of the phenomenon); Shuman, *supra* note 65, at 161 (citing evidence that people are generally overconfident about the likelihood of outcomes).

<sup>67</sup> Egocentric bias would not have influenced the criminal prime in the same way because the study's criminal sanctions punished the behavior described in each vignette, without regard to any resulting injury. Of course, it is possible that egocentric bias might have affected subjects' perceptions of the likelihood of their getting caught. This possibility is discussed in the following paragraphs.

<sup>68</sup> Timur Kuran & Cass R. Sunstein, *Availability Cascades and Risk Regulation*, 51 STAN. L. REV. 683 683, 706 (1999).

<sup>69</sup> Recall that there was a slight down-tick in the cumulative likelihood of risky behavior in a comparison between the No Tort/No Crim survey and the Tort Survey—but not a statistically significant difference.

Aside from the potential dampening effect of subjects' cognitive limitations, it is also possible that tort liability is inherently a weak deterrent. A number of explanations for its weakness are worth considering. First, even without the effect of the availability heuristic, tort liability is empirically uncertain. All evidence suggests that only a small percentage of tortious injuries result in the filing of a civil action.<sup>70</sup> Even fewer result in payment of damages, whether by settlement or trial verdict. The empirical facts might also be magnified by popular perceptions regarding the uncertainty of the trial process and the degree to which its result might be manipulated by the relative strength of one's attorney.

A second potential explanation can be traced to the nature of tort law's primary standard for liability. Negligence liability is predicated upon a jury-mediated reasonableness standard. Reasonableness naturally draws upon shared community experiences and social norms. It might be the case that people generally act—or at least feel that they should act—in accord with these social norms even without the external pressure of tort law.<sup>71</sup> If so, tort law would contribute little to people's decisional calculi. Instead, it would serve merely as an organic reinforcement mechanism, informed by and re-entrenching existing social standards of conduct.<sup>72</sup> One might argue that the present study lends credence to this theory. Because respondents were already guided by their internal, socially attuned moral compass, the threat of tort sanctions had little effect on their reported willingness to engage in risky behavior.<sup>73</sup> Such a conclusion would add depth to prior social science research finding that external sanctions generally are weaker deterrents than internal norms.<sup>74</sup>

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<sup>70</sup> See, e.g., Ruth Ruttenberg, W. Jonathan Cardi, Estye Ross, *The Taxpayer's Burden from Product-Related Injuries* 24-27 (March 1, 2011) (unpublished manuscript, on file with author, Jonathan Cardi) (calculating that although there were only 24-29,000 product liability suits filed in 2005, there are an average of over 131,000,000 product-related injuries annually) .

<sup>71</sup> See Schwartz, *supra* note 12, at 382 (suggesting that tort law may not be a strong deterrent due to moral deterrence and the risk of tortious behavior to self).

<sup>72</sup> Cf. generally James Gibson, *Doctrinal Feedback and (Un)reasonable Care*, 94 VA. L. REV. 1641 (2008) (proposing that this phenomenon, in some cases, creates a loop which constantly ratchets up levels of care—e.g., in the medical field, where fear of liability causes physicians to practice defensive medicine, the defensive practices then become the standard of care and physicians are forced to act even more defensively).

<sup>73</sup> It is helpful to think about this concept in concrete terms. Suppose that the threat of tort sanctions exerted 10 utiles of deterrent pressure on one's conduct and that social norms exerted between 50 and 100 utiles of deterrent pressure (the precise number differing according to the individual, the circumstances, and the particular norm). If 20 utiles of deterrence were all that is necessary to deter one from undertaking a particular risk, then the existence of tort law would be superfluous.

<sup>74</sup> See generally, e.g., Linda S. Anderson, Theodore G. Chiricos & Gordon P. Waldo, *Formal and Informal Sanctions: A Comparison of Deterrent Effects*, 25 SOCIAL PROBLEMS 103 (1977) (finding that moral norms had a stronger deterrent effect with respect to marijuana use than external sanctions); Harold G. Grasmick & Robert J. Bursik, Jr., *Conscience, Significant Others, and Rational Choice: Extending the Deterrence Model*, 24 LAW & SOC'Y REV. 837, 838 (1990) (collecting relevant research and noting that “[e]specially in recent years, based primarily on accumulating evidence from panel studies of juveniles, the emerging conclusion appears to be that the effect of legal sanction threat is not as great as the effects of variables from other theories [particularly morality]”); Michael Wenzel, *The Social Side of Sanctions: Personal and Social Norms as Moderators of Deterrence*, 28 L. & HUMAN BEHAVIOR 547 (2004) (finding that tax sanctions were effective only when internal ethical constraints were weak). The theory set out in the text might also be offered to explain the difference in effect between criminal and civil

This explanation proves to be less than fully robust, however, for two reasons. First, even if—relative to corresponding social norms—the threat of tort sanctions is too weak in most instances to serve as a measurable deterrent, one might expect to see a divergence where competing desires tempt people to depart from the social norm. In such marginal instances, one might expect the threat of tort sanctions—although collinear with social norms—to tip the decisional calculus toward compliance. Indeed, the Parking (#5) and Watercraft (#2) vignettes were designed specifically to test tort sanctions’ mediating effect between contrasting internal impulses. The Parking vignette queried subjects’ willingness to bump cars while parking in order to secure a spot and be on time for work. Although in the normal case, one’s internalized social norms about avoiding physical harm to others’ property might alone deter one from risking damage to the cars, the competing pressure to be on time for work might override the weight of that social norm. Were the theory described above correct, the added threat of tort sanctions would have some marginal effect in the presence of competing interests.<sup>75</sup> The results did not support this view. In the context of the Parking vignette (and the conceptually similar Watercraft vignette), the threat of tort sanctions had no deterrent effect.<sup>76</sup>

Second, if tort law fails to deter because social norms alone serve as a sufficient deterrent, then one would expect tort law’s deterrent power to emerge in cases where liability runs counter to accepted norms. The study tested for this possibility, albeit only in the context of the train vignette. Prior research using the train vignette has shown that a majority of people feel that it is morally preferable to throw the switch, killing one person, than to allow the train to run unchecked into a group of people.<sup>77</sup> In our study, however, throwing the switch would expose one to potential liability, thus creating pressure opposite the social norm. Yet still, the tort sanctions produced no differential deterrent effect.<sup>78</sup> One might induce from this result that the social norm theory for tort law’s failure to deter does not tell the entire story.<sup>79</sup>

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primes. Unlike the tort law, criminal laws do not typically consist of generalized norm-based standards, but rather prohibitions of specific conduct—for example, “do not throw dangerous objects in the park.” Nor do they necessarily track community norms of “reasonableness.” Driving 30 miles per hour in a 25 mph zone, for instance, might well correspond with community norms, but it is still a statutory violation. To the extent that a criminal law departs from, or at least is more specific than, relevant moral norms, one might expect it to have more of a deterrent effect.

<sup>75</sup> To modify the example presented in Note 73, *supra*, where a competing desire presents pressure towards risk in an amount of -50 utiles, the deterrent pressure of the relevant social norm alone might not deter the individual from taking the risk. With the additional deterrence pressure of 10 utiles provided by tort law, the individual might be deterred.

<sup>76</sup> It is possible that such a finding is limited to the context of these two particular vignettes. Perhaps, to continue the heuristic in the previous notes, the competing desire exerts -100 utiles of pressure towards risk, overwhelming both the deterrent pressure of social norms and tort law. Future testing of a wider range of vignettes is necessary to reach a conclusion regarding this point.

<sup>77</sup> E.g. Theodore Y. Blumoff, *The Neuropsychology of Justifications and Excuses: Some Problematic Cases of Self-Defense, Duress, and Provocation*, 50 JURIMETRICS 391, 425 (2010).

<sup>78</sup> Threat of criminal sanctions did have a deterrent effect, however.

<sup>79</sup> One possible rejoinder is that perhaps the social norm in favor of throwing the switch is so strong that it completely overwhelmed the relatively weak deterrent effect of tort sanctions. On the other hand, the study’s 7-point Likert scale (in combination with the study’s relatively large sample size) should be sensitive enough to register even small marginal effects created by the threat of tort liability. As mentioned previously, future testing of a wider range of vignettes is necessary to reach a conclusion regarding this point.

Two further possible explanations for tort law's failure to deter are worth discussing. One argument is that tort law fails to influence people's conduct because liability insurance shields them from any real financial threat. Although this argument seems plausible with regard to certain activities such as driving a car or activities that occur in one's home, it seems less plausible with regard to the many everyday activities not commonly insured. In the context of the present study, a number of the vignettes involve activities not covered by insurance.<sup>80</sup> Moreover, with the ranks of the uninsured swelling in America, it seems likely that a sizeable percentage of this study's subjects (law students) are not insured in ways that would cover the hypothetical activities they were asked to rate. Thus, although insurance might blunt some pockets of tort law's ostensible deterrent effect, it seems unlikely to do so on a broad scale—and even more unlikely in the context of this study.

Finally, one might postulate that although tort law does not deter the average person, it might deter a subset of the population that has an extra-ordinary penchant for seeking risk. Or perhaps tort law deters only those who have an extra-ordinary adversity to risk.<sup>81</sup> This study found to the contrary on both counts, however. Specifically, the level of respondents' predisposition toward risk did not vary their reaction to the legal primes.<sup>82</sup>

*Explanation 2: Tort Law Does Deter, but This Study Fails to Measure Its Effect:* A second possible explanation of this study is that tort law does, in fact, deter but that this study did not capture its deterrent effect. One set of arguments in this vein might focus on the study's inherent limitations, the most obvious of which is that the study (like all survey-based research) tested only subjects' reported behavior rather than their actual behavior. Perhaps subjects were cavalier in reporting their willingness to engage in risky conduct, where if actually faced with the scenarios presented by the vignettes, they would have been deterred. In other words, talk is cheap.

While we tend to agree that talk is indeed cheap, we think that this phenomenon would, if at all, bias the findings in favor of finding a deterrent effect of tort. Individuals would be more likely to report a decreased willingness to take risks in the face of tort sanctions than they would be to actually engage in such conduct. Particularly where the respondents were first semester tort students who took the survey in the early days of their torts class, one might expect them to give tort law greater than average respect. Studies have shown that survey participants tend to over-report behaviors they deem to be socially acceptable and under-report those deemed to be unacceptable.<sup>83</sup>

A second limitation of this study is that it tested subjects' considered decisions rather than their snap judgments. Admittedly, this aspect of the study makes it under-inclusive, for many incidents of tortious behavior consist of snap judgments. Again, however, it seems intuitive that this fact would have enhanced, not negated, tort law's deterrent effect on respondents' answers. It seems likely that people would discount possible sanctions when making snap judgments,

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<sup>80</sup> Although umbrella liability policies are available, many people—and particularly the law student subjects of this study—do not carry them. Furthermore, not even umbrella policies cover some of the activities described in the vignettes—e.g., intentional harms.

<sup>81</sup> By analogy, studies show that criminal offenders are naturally inclined to be risk-takers rather than risk-avoiders. Robinson & Darley, *supra* note 14, at 179.

<sup>82</sup> *Supra* page 22.

<sup>83</sup> Janne Chung & Gary S. Monroe, *Exploring Social Desirability Bias*, 44 J. BUS. ETHICS 291, 293 (2003).

weighing sanctions more carefully in the context of the considered judgments tested in this study.

Next, one must consider the fact of how the respondents compare with the general population. In many respects, law students were indeed representative—the sample had a strong degree of school-tier, regional and gender diversity, for example. The sample was not particularly diverse along other dimensions, such as subjects' age, ethnicity, and family income (In fact, as a collateral note, it is eye opening to see that in our sample of law students across the spectrum of U.S. law schools, students are still predominantly upper-middle class and Caucasian). Finally, although respondents presented a variety of inherent degrees of risk-proclivity, the population overall was slightly more risk-averse than populations in previous studies using the DOSPERT measure.<sup>84</sup> Nonetheless, in verifying randomization of the survey, we found that the respondents' answers did not vary significantly based on these individual characteristics. This finding does not preclude the possibility that these characteristics might influence responses among the general population. Although it seems likely that risk proclivities might diverge according to a person's age, ethnicity, and socio-economic background, it is difficult to predict the direction in which divergence in each category might push the results. It does seem unlikely, however, that the population sample in this study—law students—would be significantly less deterred by the threat of tort liability than the broader population.

Finally, this study tested only the deterrent effect of tort law on individuals' conduct, not the conduct of institutional actors. Prior research has hinted that the threat of tort sanctions might have a greater deterrent effect on firms. In the least, the authors of this study agree that tort law affects institutions differently than individuals in important ways.

Aside from the inherent limitations in the study's design, there exists the possibility of a deeper challenge. Consider the possibility that tort law's mere existence serves as a general deterrent, but that it fails to deter specific tortious acts. Perhaps the negligence standard tracks social norms and therefore does not ratchet-up people's standards of care. The background threat of tort sanctions, however, might reinforce those social norms, decreasing the likelihood that people will depart from them. Were this the case, the present study might not detect tort law's deterrent effect. If the background deterrent effect of tort law is deeply ingrained in the minds of the public, perhaps expressly telling individuals that they face no criminal or tort liability (Condition 1) holds little sway. Put differently, if tort law's effect as a deterrent stems not from people's conscious (or near-conscious) consideration of liability, but from a more ingrained general reinforcement of social norms, perhaps the survey's attempt to reverse this deterrent effect fell short. Although it is difficult to disprove (or prove) such a construct, this explanation for the survey's results seems to us unlikely.

*Implications and Avenues for Further Study:* Our findings are consistent with the view that tort law does not deter. If these results reflect the true state of the world, the implications are profound. Law and economics scholarship and courts' reasoning in many torts cases—as stated at the outset—are both often founded on a contrary assumption. One response to this study's findings might be to shift the inquiry to asking “why does tort law not deter?” and “how might the law change so that it *does* deter?” Indeed, behavioral law and economists are already asking these questions. More dramatically, if economists become convinced that tort law does not and

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<sup>84</sup> The mean DOSPERT score of the Canadian sample tested by Blais & Weber, *supra* note 43, was 3.739, or approximately 0.5 standard deviations higher than the mean score of our sample.

cannot deter, perhaps Calabresi's arguments for a comprehensive compensation system would finally gain popular support.<sup>85</sup>

At an even more fundamental level, however, one might reasonably query whether such a conclusion would diminish tort law's *raison d'être*. To most law and economists, the answer would be yes—if tort law does not deter, then it is of diminished, and possibly negative worth. For other tort scholars, such as corrective justice theorists, the rationale for tort law runs much deeper than deterrence. As an historical matter, tort did not arise as a means of deterring future misconduct, but as a way to resolve individual disputes over who should pay for allegedly wrongful acts that result in injury.<sup>86</sup> This notion is not quaint or anachronistic, although it has lost some of its currency in the broader academic community.

The results of this study, in themselves, do not warrant an ultimate and sweeping conclusion that tort law does not deter. Much further research is warranted. As a first step, the study should be extended to a broader population sample. One avenue would be to administer it to citizens awaiting selection for jury duty—the authors are currently exploring this possibility. In addition, the measure's internal validity might be improved by increasing the number of vignettes. Because the study was meant to test the deterrent power of tort law generally, the vignettes had to cover a lot of doctrinal ground. A larger battery of vignettes would provide redundancy with respect to each aspect tested, which in turn would likely result in stronger overall validity scores.

Aside from improvements to this study, the study might be adapted to test snap judgments, rather than considered decisionmaking. This might be possible by using the methods employed in implicit bias testing, studies which measure subjects' response rates in identifying faces or objects.<sup>87</sup> A test might be devised in which subjects are shown hazardous situations and are forced to choose between available options as quickly as possible. Such a study might test subjects' snap decisionmaking in light of various levels of sanctions. Finally, the measure might be adapted to distinguish differences between individuals and firms. In such case, the vignettes would involve business decisions, and the subject population would be institutional decisionmakers.

## **VI. Conclusion**

While multiple approaches can explain the rationale for tort liability, in recent decades deterrence has arguably been the dominant theory. This grossly under-tested theory suggests that imposing tort liability on individual wrongdoers will deter the general public from engaging in careless and potentially harmful activities. Our survey of first-year law students found that the threat of tort liability does not deter individuals from these activities. Our study, the first to examine this question through experimental design, is difficult to reconcile with long-standing assumptions about tort law's value as a deterrent, held by many judges and academics. We believe our study warrants closer examination.

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<sup>85</sup> See generally GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* (1970)

<sup>86</sup> E.g. Jason M. Solomon, *Equal Accountability Through Tort Law*, 103 *NORTHWESTERN U. L. REV.* 1765, 1772-73 (2009).

<sup>87</sup> The incredible variety of implicit bias literature may be accessed at <https://implicit.harvard.edu/implicit/>.

Appendix A

**Survey #1**

**General Information**

We invite you to take part in a research study that will examine people’s risk-taking predispositions and people’s willingness to engage in behavior involving various levels of risk under different legal conditions. This study is anonymous. That means that no one, not even members of the research team, will know that the information you give came from you.

This research study involves the completion of an online survey. The questions pertain to your risk-taking predisposition and your willingness to engage in certain behaviors under a variety of conditions. The time it usually takes to complete this survey ranges from 15-20 minutes. There are no known risks to participating in this study. If you decide to take part in the study, it should be because you really want to volunteer. You have the right to decide at any time that you no longer want to continue.

By completing the survey, you are giving your consent to participate in this study.

The people in charge of this study are Albert Yoon of the University of Toronto and Jonathan Cardi of the University of Kentucky. If you have questions, suggestions, concerns, or complaints about the study, you can contact Jonathan Cardi at [jcardi@uky.edu](mailto:jcardi@uky.edu). If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

For each of the following situations, please indicate the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from Extremely Unlikely to Extremely Likely using the scale following each situation. You will find that some of the situations are similar to one another, but different in certain respects. Your ratings of these situations will not necessarily be different—they might be different or the same.

1. Imagine that your favorite recreational activity is frisbee golf. You are disappointed, however, by the frisbees available on the market. In an attempt to create a frisbee that will travel farther and make it through interfering trees and brush, your friend has designed a frisbee with thinner-than-average edges and that is heavier because it is made of metal rather than plastic. You have gotten your hands on one and would like to try it out at a nearby park. The park is about as large as a football field. Upon arriving, you find about forty people walking dogs, sunbathing, and engaging in other typical park activities. There are no laws or park rules against throwing your frisbee, and you will not be sued or have to pay for any injury caused by your doing so. How likely is it that you will test the frisbee as planned?

1	2	3	4	5	6	7
Extremely	Moderately	Somewhat	Not Sure	Somewhat	Moderately	Extremely

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Unlikely      Unlikely      Unlikely                      Likely      Likely      Likely

(The Likert scale is repeated after each of the first thirty-nine questions.)

2. Imagine that you are planning a party at your lake house at which you plan to allow your guests to ride your two wave-runners (small 1-2 person watercraft). You do not own life vests. There are no laws or rules against riding a wave-runner without a life vest or providing a wave-runner to a social guest without providing a life vest, and you will not be sued or have to pay for any injury that your guests may sustain as a result of riding without life vests. How likely is it that you will make the wave-runners available to your guests without also providing life vests?

3. Imagine that you are driving home and remember that today is your friend's birthday. You would like to call your friend while you are driving to wish them a happy birthday. There are no laws against talking on your cell phone while driving your car, and you will not be sued or have to pay for any injury caused by your doing so. How likely is it that you will call your friend while driving home?

4. Imagine that you are an EMT (Emergency Medical Technician) who works in an ambulance at a local hospital. While driving your car to work early one morning, you notice that a person on a motorcycle has recently wrecked and is lying next to his motorcycle at the side of the road. The person appears to be alert and is not bleeding profusely, but also appears to have injuries bad enough that the person will not be able to drive away from the scene. You are late for work and feel that you really don't have time to stop and help. You also figure that someone else will be driving by soon. There are no laws against your continuing on to work without stopping, and you will not be sued or have to pay for any additional injury the person suffers as a result of not receiving immediate medical attention. How likely is it that you will continue to drive to work without stopping?

5. Imagine that you are parallel-parked along a curb near a restaurant which you visited during a lunch-break from work. When you return to your car, you discover that other people have parked their cars only six inches from your front and rear bumpers, making it impossible for you to leave. You need to return to work, but the only way for you to do so at present is to bump one of the cars with your car in order to make room. There are no laws against your bumping one of the cars, and you will not be sued or have to pay for any damage that you may cause as a result of doing so. How likely is it that you will bump one of the cars?

6. Imagine that you are a railroad worker who is working on a switch at a train station. Although it is a working train station, it was built in the 1800s and so it is a popular tourist attraction. The area where you are working is not used by trains and is therefore busy with tourists. Suddenly, a run-away train rounds the bend and careens down the tracks towards you. If it continues on its present path, it will barrel into a group of tourists standing on the tracks. If you throw the switch on which you are working, however, the train will turn onto a different track on which only one person is standing. There are no laws against your throwing the switch, and you will not be sued or have to pay for any injury the person on the side-track suffers. How likely is it that you will throw the switch?

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7. Imagine that your favorite recreational activity is throwing boomerangs (curved objects about one foot long that, when thrown, eventually travel in an arc back to the thrower). You are disappointed, however, by the boomerangs available on the market. In an attempt to create a boomerang that will travel farther and make it through interfering trees and brush, your friend has designed a boomerang with thinner-than-average edges and that is heavier because it is made of metal rather than plastic or wood. You have gotten hold of the boomerang and would like to try it out at a nearby park. The park is about as large as a football field. Upon arriving, you find about forty people walking dogs, sunbathing, and engaging in other typical park activities. There are no laws or park rules against throwing your boomerang, and you will not be sued or have to pay for any injury caused by your doing so. How likely is it that you will test the boomerang as planned?

8. Imagine that you work for a construction company at a busy urban construction site. Your job is to operate a forklift, carrying a variety of heavy construction supplies to your fellow workers around the site. Today at work, you feel like you are coming down with a cold—you have a headache, and your nose is getting more and more congested. A friend offers you an over-the-counter cold medicine. You have taken the medicine before and recall that it worked well but also made you feel a bit loopy. There are no laws or company rules against taking cold medicine while operating your forklift, and you will not be sued or have to pay for any injury caused by your doing so. How likely is it that you will take the medicine?

9. Imagine that you are a manager at a mid-size business. A member of the human resources department of an out-of-state company has contacted you seeking information about one of your ex-employees, who has applied to the company for a job. You seem to remember that the employee was regularly late for work. You are too busy to research whether your memory is accurate. There are no laws or company rules against telling the caller about the ex-employee's lateness, and you will not be sued or have to pay for any injury caused by your doing so. How likely is it that you will reveal the memory?

For each of the following statements, please indicate the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from Extremely Unlikely to Extremely Likely using the scale following each statement. You will find that some of the statements are similar to one another, but different in certain respects. Your ratings of these statements will not necessarily be different—they might be different or the same.

10. Admitting that your tastes are different from those of a friend.
11. Going camping in the wilderness.
12. Betting a day's income at the horse races.
13. Investing 10% of your annual income in a moderate growth mutual fund.
14. Drinking heavily at a social function.
15. Taking some questionable deductions on your income tax return.
16. Disagreeing with an authority figure on a major issue.
17. Betting a day's income at a high-stake poker game.
18. Having an affair with a married man/woman.
19. Passing off somebody else's work as your own.
20. Going down a ski run that is beyond your ability.

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21. Investing 5% of your annual income in a very speculative stock.
22. Going whitewater rafting at high water in the spring.
23. Betting a day's income on the outcome of a sporting event.
24. Engaging in unprotected sex.
25. Revealing a friend's secret to someone else.
26. Driving a car without wearing a seat belt.
27. Investing 10% of your annual income in a new business venture.
28. Taking a skydiving class.
29. Riding a motorcycle without a helmet.
30. Choosing a career that you truly enjoy over a more prestigious one.
31. Speaking your mind about an unpopular issue in a meeting at work.
32. Sunbathing without sunscreen.
33. Bungee jumping off a tall bridge.
34. Piloting a small plane.
35. Walking home alone at night in an unsafe area of town.
36. Moving to a city far away from your extended family.
37. Starting a new career in your mid-thirties.
38. Leaving your young children alone at home while running an errand.
39. Not returning a wallet you found that contains \$200.
  
40. Are you Male or Female?
41. What is your age?
  - 1 18-20
  - 2 Intervening answer choices in three-year increments
  - 3 80+
42. For how many years have you lived in the United States?
  - 1 0-5 years
  - 2 6-10 years
  - 1 11-20 years
  - 2 21-30 years
  - 3 More than 30 years
43. In what state are you currently a legal resident?
44. What is the highest level of education you have completed?
  - 1 Less than high school
  - 2 High school/GED
  - 3 Some college
  - 4 2-year college degree (Associates)
  - 5 4-year college degree (BA/BS)
  - 6 Masters degree
  - 7 Doctoral degree
  - 8 Professional degree (JD/MD)
45. What is your total annual household income, including all earners in your household? If you are a student, what is the approximate annual household income of the family with whom you were raised?
  - 1 Less than \$10,000
  - 2 Intervening answer choices in \$10,000 increments

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- 3 Over \$200,000
46. How would you characterize your race/ethnicity?
- 1 Caucasian
  - 2 African-American
  - 3 Hispanic
  - 4 Asian/Pacific Islander
  - 5 Native American
  - 6 Multi-Racial
  - 7 Not known
  - 8 Other: Please Specify
47. Have you ever attended and completed at least one semester of law school?
48. Have you ever sued someone or been sued in a court of law?