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COVID-19 Tort Reform

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ABSTRACT

In 2020 and 2021, 44 states and Washington, D.C. passed laws that limited tort liability related to COVID-19. The most common reforms immunized health care providers from malpractice or similar liability. A second category is limited liability to individuals or businesses for exposing others to the novel coronavirus. And a third category protected manufacturers of supplies used to detect and prevent COVID-19 from products liability suits. The goals of these reforms included protecting health care providers from uncertainty in providing care for a novel disease, limiting the macroeconomic consequences of the pandemic, and encouraging the distribution of critical supplies to avoid shortages.

States providing immunity assumed that institutions and individuals alike would react to reforms, as theory predicts, by engaging in more of the immunized activities. In general, the literature supports the assumption that institutions, like hospitals or manufacturers of face masks and COVID-19 tests, change their behavior in response to tort reform. Yet there is little empirical evidence demonstrating how tort law affects risk-taking by individuals. The lack of evidence about the relationship between tort law and individual decision-making is of broad interest, as one of the primary goals of tort law is to incentivize efficient levels of risk-taking.

This Article provides novel empirical evidence on the effects of COVID-19 tort reform on public health. The analysis yields three important results. First, it shows that medical liability reforms had counterproductive public health effects. States that immunized health care providers from tort suits arising out of COVID-19 care experienced 20% more COVID-19 cases and 5% more COVID-19 hospitalizations. Second, the results demonstrate that exposure reforms counterintuitively decreased COVID-19 cases by making it easier for businesses and other institutions to require customers to comply with public health guidance. Third, the results reveal that tort law had very little effect, if any, on the precautions individuals chose to avoid contracting or spreading the disease. The third result is broadly interesting, as it indicates that tort law will be a weak incentive to individuals whenever they are choosing a level of care that can protect themselves or others.

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INTRODUCTION

The COVID-19 pandemic was an unprecedented public health crisis in the United States. By March 2023, the novel coronavirus which caused COVID-19 had infected more than one hundred million individuals and caused more than one million deaths in the United States.[1] The pandemic caused massive political, social, and cultural changes as policymakers and individuals tried to minimize the risk the virus posed.

Like many catastrophes, the COVID-19 pandemic gave rise to substantial litigation.[2] Plaintiffs brought many different tort claims,

1. *COVID-19 Dashboard,* CTR. FOR SYS. SCI. AND ENG'G. JOHNS HOPKINS UNIV. & MED., https://coronavirus.jhu.edu/map.html [https://perma.cc/6MUQ-EGRX].

2. *See, e.g.*, *In re* Deepwater Horizon, 732 F.3d 326 (5th Cir. 2013) (businesses sued British Petroleum following the largest oil spill in U.S. history); *In re* Nat'l Prescription Opiate Litig., 477 F. Supp. 3d 613 (N.D. Ohio 2020) (local governments and others sued opioid manufacturers and distributors in response to the opioid epidemic that has killed hundreds of thousands); *In re* Sept. 11 Litigation, 280 F. Supp. 2d 279 (S.D.N.Y.

seeking compensation from defendants when they exposed plaintiffs to the coronavirus.[3] Employees sued their employers arguing that the employers didn't take enough care to protect workers.[4] Nursing home residents sought compensation for their nursing home's failure to adequately diagnose and treat COVID-19.[5] And federal prisoners brought claims under Section 1983, arguing that prisons were deliberately indifferent to the risks that the novel coronavirus posed to prisoners' health and safety.[6] Tort law provides many plausible avenues for an individual to seek compensation, so it is no surprise that the pandemic prompted numerous suits. Under the right circumstances, a novel coronavirus infection could give rise to claims of negligence, products liability, premises liability, medical malpractice, and more.[7]

Holding defendants liable for COVID-19-related damages under ordinary tort principles could have significant public health and macroeconomic consequences.[8] In theory, holding actors liable for exposing others to the virus would cause individuals to take greater care and perform fewer activities that could endanger others.[9] There would, in turn, be fewer COVID-19 cases. Institutional actors, like businesses, that risk liability for exposing customers may invest in safety measures and pass those costs on to consumers or employees in the form of higher prices or lower wages.[10] Firms must choose between risking liability, making costly investments to reduce virus transmission, or closing their doors.[11] Liability for health care providers

2003) (injured victims and survivors of victims sued airlines, security companies, and others).

3. KEVIN M. LEWIS ET AL., CONG. RSCH. SERV., R46540, COVID-19 LIABILITY: TORT, WORKPLACE, AND SECURITIES LAW 1–2 (2020).

4. *E.g.*, Complaint, Benjamin v. JBS S.A., No. 2:20-cv-02594 (E.D. Pa. June 2, 2020); Complaint, Evans v. Walmart, No. 2020-L-003938 (Ill. Cir. Ct. Apr. 6, 2020).

5. *E.g.*, Complaint, Hendrix v. Arbor Terrace at Cascade, LLC, No. 1:20-cv-02326 (N.D. Ga. May 29, 2020); Complaint, De Los Angeles v. Life Care Ctrs. Of Am., Inc., No. 20-2-07689-9 (Wash. Super. Ct. Apr. 10, 2020).

6. *E.g.*, Jones v. Pollard, No. 06-C-0312, 2021 WL 395548, at *1–2 (S.D. Cal. Feb. 4, 2021).

7. *See infra* Part I, Section A.

8. Michelle L. Richards, *Going Viral?: Discouraging the Premature Use of Civil Liability Strategies as a Response to COVID-19*, 19 U.N.H. L. Rev. 491, 497–507 (2021) (arguing that imposing liability is unlikely to have public health benefits in the COVID-19 pandemic).

9. *See* STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 193–206 (2004) (demonstrating that more liability incentivizes greater care and less risky activity).

10. *E.g.*, *id.* at 212–23 (arguing that firms will pass the cost of taking more care on to their consumers).

11. *Cf. id.* at 213–23 (outlining the effects of products liability law on prices).

could prompt them to treat fewer patients due to the uncertainty in proper treatment. Manufacturers of COVID-19 tests or protective equipment, in turn, could raise prices to incorporate the costs of liability if their products are found defective or decline to create such products altogether.[12]

Most states decided that the potential tradeoffs favored some immunity from liability. As of January 2022, forty-four states and Washington, D.C. provided some immunity from tort liability related to the COVID-19 pandemic.[13] The reforms broadly fall into three categories: (1) malpractice and negligence immunity for health care providers[14]; (2) premises liability and negligence immunity for businesses and individuals that expose others to the novel coronavirus[15]; and (3) products liability immunity for protective equipment manufacturers.[16] The goals of these reforms included protecting health care providers from liability accruing due to uncertainty in providing care for a novel disease, limiting the macroeconomic consequences of the pandemic, and encouraging the distribution of critical supplies to avoid shortages.[17] And yet, little empirical evidence to date has explored what effect these reforms had on public health outcomes.

This Article empirically examines the effects of COVID-19 tort reform. The empirical model identifies the effect of COVID-19 tort reform on COVID-19 tests, cases, hospitalizations, and deaths. The model provides evidence that COVID-19 medical liability reform increased COVID-19 tests, cases, and hospitalizations. Negligent exposure reforms, in turn, modestly decreased COVID-19 cases and hospitalizations.[18] Products liability reform had no statistically significant effects.[19]

The results from this empirical analysis provide critical evidence about the limited effect that tort law has on the behavior of individuals. The negative public health consequences of medical reforms, compared to the benefits of exposure reforms, indicate that individuals did not

12. *See* NATHAN WEBER, PRODUCT LIABILITY: THE CORPORATE RESPONSE 13 (1987) (reporting that 43% of corporations studied raised prices because of products liability claims).

13. *See infra*, Table 1.

14. *E.g.*, 2020 Mich. Pub. Acts 268.

15. *E.g.*, *id.*

16. *E.g.*, 2020 La. S.B. 491.

17. *See generally* AM. TORT REFORM ASS'N, RESPONDING TO THE COMING LAWSUIT SURGE: POLICY PRESCRIPTIONS FOR ADDRESSING COVID-19 TORT LITIGATION (2020), https://www.atra.org/wp-content/uploads/2020/04/ATRA-COVID-19-White-Paper.pdf [https://perma.cc/N2GB-4LFZ].

18. *See infra* Part III.

19. *Id.*

change their behavior in response to COVID tort reforms. Despite its foundational role in law and commercial activity, few empirical studies investigate how liability affects individual behavior, rather than the behavior of institutional actors. Physicians, for example, adhere to changes in specific liability standards.[20] But outside of the medical context, in which malpractice insurers serve a major role in the incorporation of tort liability into decision-making, evidence is limited.[21] The empirical evidence in this Article shows that tort law has little influence on individual risk-taking, but that it profoundly affects health care providers and other institutional actors.

This Article proceeds as follows. Part I reviews the tort doctrines that COVID-19 tort reforms have targeted. The analysis demonstrates that COVID-19 exposure could support a claim under several doctrines, prompting state laws that provide broad immunity for individuals and businesses. Part II presents a framework for predicting the effects of COVID-19 tort reform. The framework explores the potential effects of COVID-19 tort reform. Part III presents the data and empirical model which yield the main contribution of this Article. Part IV provides the results of the empirical model and discusses their implications.

I. COVID-19 AND TORT LIABILITY

The COVID-19 pandemic, and the actions that public and private actors took in response, raised numerous legal issues. Section A reviews the various tort claims that the pandemic implicates. While courts began evaluating such claims, state governments were implementing an array of policy responses to the pandemic, regulating individual freedoms in unprecedented ways. Section B discusses how the most salient state responses to the pandemic affected the potential sources of liability that Section A presents.

20. *See, e.g.*, Michael Frakes, *The Impact of Medical Liability Standards on Regional Variations in Physician Behavior: Evidence From the Adoption of National-Standard Rules*, 103 AM. ECON. REV. 257, 258–59 (2013); *see also* Benjamin McMichael, *Healthcare Licensing and Liability*, 95 IND. L. J. 821, 826 (2020) (presenting evidence that malpractice liability modulates the impact of nurse practitioner and physician assistant scope of practice laws).

21. Michelle M. Mello, *Of Swords and Shields: The Role of Clinical Practice Guidelines in Medical Malpractice Litigation*, 149 U. PENN. L. REV. 645, 652–53 (2001) ("[T]raditional health insurers have developed their own guidelines for appropriate care. . . . [M]alpractice insurers have more incentive than health insurers to adopt [clinical practice guideline]s that emphasize top quality care over low-cost care.").

A. Sources of COVID-19 liability

Tort law's primary goals are to incentivize efficient risk-taking and make injured parties whole.[22] Accordingly, it is unsurprising that individual behavior in a pandemic, when individuals constantly expose others to new risks and consequently cause substantial injury, implicates several tort doctrines. Surveying every possible source of tort liability relevant to COVID-19 would be impossible.[23] Instead, this Section focuses on the three categories of liability relevant to state policy responses to the pandemic: (1) medical malpractice and similar liability, (2) exposure claims arising in premises liability or ordinary negligence, and (3) products liability. Across all three categories, individuals could plausibly raise COVID-19 claims, but serious barriers exist for most potential plaintiffs.

1. Medical malpractice

To prevail on a claim for medical malpractice, a patient must demonstrate: (1) that there was a provider-patient relationship between the plaintiff and defendant health care provider (2) the provider breached that duty; (3) the breach caused harm to the plaintiff; and (4) damages can compensate for the injury.[24] In malpractice cases, the duty of care arises out of the professional relationship between the provider and patient.[25] Unlike a defendant in ordinary negligence, who must take the level of care that an ordinary reasonable person would, a defendant in a medical malpractice case must take caution consistent with the skill and knowledge of an ordinary member of the medical profession.[26]

Plaintiffs who sought care for COVID-19 from a medical provider could sue that provider, claiming that faulty care resulted in larger

22. *See, e.g.*, Hayes Sight & Sound, Inc. v. ONEOK, Inc., 136 P.3d 428, 442 (Kan. 2006); Abraham Bell, *Not Just Compensation*, 13 J. CONTEMP. LEGAL ISSUES 29, 49 (2003).

23. Examples of claims that plaintiffs have brought but which are outside the scope of this paper include inmates bringing claims under section 1983 arguing that confinement during the pandemic is unconstitutional and several groups of plaintiffs arguing that companies violated securities laws by failing to adequately disclose the effects of COVID-19 on their finances. *See, e.g.*, Stanford L. Sch. Securities Class Action Clearinghouse, *Current Topics in Securities Class Action Filings – COVID-19* (last accessed May 26, 2021), https://securities.stanford.edu/current-topics.html (collecting data on COVID-19 class actions); Valentine v. Collier, 956 F.3d 797 (5th Cir. 2020) (per curiam) (staying a preliminary junction pending appeal that ordered the Texas prison system to take action to protect inmates from COVID-19).

24. Patton v. Thompson, 958 So. 2d 303, 312 (Ala. 2006).

25. Greenberg v. Perkins, 845 P.2d 530 (Colo. 1993).

26. Devitre v. Orthopedic Ctr. of St. Louis, LLC, 349 S.W.3d 327, 335 (Mo. 2011) (*en banc*).

medical bills, a worsening of their condition, or death. In such cases, duty and damages would be apparent, but establishing breach and causation will be challenging. The care that a practitioner of ordinary skill and knowledge will take during a rapidly evolving medical crisis is dynamic and ambiguous. Indeed, the approach that health care providers took to treating COVID-19 changed frequently.[27] In March 2020, it was not clear how a health care provider of ordinary skill and knowledge would treat a patient with COVID-19. Over time, practitioners and researchers explored using corticosteroids, antiviral drugs, blood thinners, convalescent plasma, hydroxychloroquine, and more to treat individuals with severe COVID-19.[28] By the time juries would evaluate whether a particular course of care was sufficient, medical knowledge would have advanced substantially, creating a risk that hindsight bias would yield more liable verdicts than perhaps appropriate.[29] Some health care providers needed to ration care in hospitals that were at capacity.[30] The fact-intensive determinations about which patients receive care when resources are constrained could provoke malpractice claims from patients.[31] Plaintiffs who feel that their providers used or did not use novel treatments could allege their providers did not satisfy their duty of care.[32] But to prevail, they would

27. *See generally* Avinash Kumar Jha & Sudhindra Gurunath Kulkarni, *Evolution of COVID-19 Management in Critical Care: Review and Perspective from a Hospital in the United Kingdom*, 36 ACUTE CRIT. CARE 1 (2021).

28. *See Coronavirus Resource Center: Treatments for COVID-19*, HARV. HEALTH PUBL'G (Dec 4, 2023), https://www.health.harvard.edu/diseases-and-conditions/treatments-for-covid-19 [https://perma.cc/28WA-UE2D].

29. Maggie Wittlin, *Hindsight Evidence*, 116 COLUM. L. REV. 1323, 1359 (2016) ("Hindsight bias . . . is the tendency not only to view what has happened as having been inevitable, but also view it as having appeared relatively inevitable before it happened.").

30. Julia Harte & Sharon Bernstein, *Some U.S. Hospitals Forced to Ration Care Amid Staffing Shortages, COVID-19 Surge*, REUTERS (Sept. 17, 2021), https://www.reuters.com/world/us/some-us-hospitals-forced-ration-care-amid-staffing-shortages-covid-19-surge-2021-09-17/ [https://perma.cc/Y8VQ-F3DY]; Glenn Cohen et al., *Potential Legal Liability for Withdrawing or Withholding Ventilators During COVID-19: Assessing the Risks and Identifying Needed Reforms*, 323 J. AM. MED. ASS'N 1901, 1901–02 (2020).

31. *See* Pappas v. Absel, 768 A.2d 1089, 1090 (Pa. 2001) (concluding that the decisions of health management organizations to withhold care or provide treatment implicate state law claims for medical malpractice).

32. *E.g.*, Nathan P. Nasrallah & DeAngelo A. LaVette, *COVID-19 and Ivermectin Lawsuits*, AM. BAR ASS'N (Oct. 28, 2021), https://www.americanbar.org/groups/litigation/committees/mass-torts/articles/2021/winter2022-covid-19-and-ivermectin-lawsuits/ [https://perma.cc/3296-XYVG] ("Some courts have granted injunctions

need to convince the finder of fact that a reasonable health care provider would have used the particular treatment that the plaintiffs alleged the provider should have used, which may prove impossible.

Defendants will face the same uncertainty over causation as with breach. Proving that a course of treatment caused the plaintiff's injury requires showing that the injury would not have occurred but-for the allegedly negligent treatment and that the injury was a foreseeable consequence of that treatment.[33] But the information that the medical community possessed about treatment efficacy or side effects evolved rapidly over the course of the pandemic.[34] Initial evidence, for example, suggested that ivermectin could treat COVID-19, though subsequent studies found no effect and found that it would harm patients to whom providers administered it.[35] But tracing the line from a particular course of care to a particular outcome would prove difficult for many patients.

2. Exposure

Next, consider the claims an individual could bring after another individual or a business exposed them to the virus. Exposure claims could potentially arise in ordinary negligence, if a plaintiff can identify the individual who infected them, or as a premises liability claim, if the plaintiff can identify the location where they contracted the virus. Indeed, groups of cruise ship passengers and employees brought claims for negligent exposure in the early pandemic.[36]

a. Negligence

Plaintiffs that can identify the individual who exposed them to the coronavirus could raise a negligence claim. To prevail on an ordinary negligence claim, a plaintiff must demonstrate that the defendant owed the plaintiff a duty of care, the defendant breached that duty of care,

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to administer ivermectin, while others have denied them, upholding hospitals' treatment protocols and the medical standard of care.").

33. *See, e.g.*, Eckroth v. Pa. Elec., Inc., 12 A.3d 422, 427 (Pa. 2010).

34. Mary Kekatos, *How COVID Treatments Evolved Over Time From Monoclonal Antibodies to Antiviral Pills*, ABC NEWS (Mar. 11, 2022, 5:30 AM), https://abcnews.go.com/Health/covid-treatments-evolved-time-monoclonal-antibodies-antiviral-pills/story?id=83213480 [https://perma.cc/9CME-AZAS].

35. *See, e.g.*, Andrew Bryant et al., *Ivermectin for Prevention and Treatment of COVID-19 Infection: A Systematic Review, Meta-Analysis and Trial Sequential Analysis to Inform Clinical Guidelines*, 28 AM. J. THERAPEUTICS e434 (2021); Nasrallah & LaVette, *supra* note 32.

36. *E.g.*, Complaint at 2, Austin v. Princess Cruise Lines Ltd., No. 2:20-cv-02531, 2020 WL 1282232 (C.D. Cal. 2020); Complaint at 3, Evans v. Walmart, No. 2020-L-003938 (Ill. Cir. Ct. Apr. 6, 2020); *see also* Alisa Baird, *Litigating an Invisible Enemy: Will the United States Insurance Industry Survive the Covid-19 Pandemic?*, 56 TULSA L. REV. 169, 184–86 (2021) (collecting cases).

the breach caused injury, and damages can compensate the injury.[37] By appropriately calibrating the level of care that defendants must take to avoid accidents, courts incentivize plaintiffs and defendants to minimize the social harm from accidents.[38] Generally, the efficient level of care is the level at which the defendant's marginal cost to more care is equal to the marginal benefit to the plaintiff of the same.[39]

Duty and causation will usually be straightforward to evaluate.[40] People generally have a duty to exercise reasonable care to avoid harming individuals whom their activities expose to a foreseeable risk.[41] Drivers, for example, must take reasonable care to avoid harming their passengers.[42] An individual who could foreseeably infect others, for example because she has tested positive for the virus, undoubtedly has a duty to take reasonable care to avoid infecting others.[43] Causation will generally be met when a plaintiff sues the person from whom the plaintiff contracted the virus and may be met under the right facts against other defendants.[44] For example, courts have held that an individual who infects a lover with a sexually transmitted infection proximately causes the infection of the lover's spouse because it is foreseeable that an individual will have sex with his or her spouse.[45] However, identifying the person from whom an individual contracted

37. *E.g.*, Dimick v. Hopkinson, 422 P.3d 512, 521 (Wy. 2018).

38. SHAVELL, *supra* note 9, at 190–95.

39. *See* United States v. Carroll Towing Co., Inc., 159 F.2d 169, 173 (2d Cir. 1947).

40. Daniel Hemel & Daniel B. Rodriguez, *A Public Health Framework for COVID-19 Business Liability*, 7 J. L. & BIOSCIENCES 1, 4 (2020).

41. *E.g.*, Domagala v. Rolland, 805 N.W.2d 14, 23 (Minn. 2011); Feld v. Borkowski, 790 N.W.2d 72, 75 (Iowa 2010).

42. *E.g.*, Stephenson v. Ledbetter, 596 N.E. 2d 1369, 1372 (Ind. 1992).

43. *See* Majid Mahmood et al., *Transmission Frequency of COVID-19 Through Pre-Symptomatic and Asymptomatic Patients in AJK: A Report of 201 Cases*, 18 VIROLOGY J. 1, 7 (2021) (reviewing COVID-19 transmission rates by symptomatic status). States have imposed similar duties on individuals who know or should know they are HIV positive to take reasonable care to not expose others to the virus. *See generally* Doe v. Johnson, 817 F. Supp. 1382 (W.D. Mich. 1993) (imposing a duty to take care when a defendant knows they have an infectious disease or symptoms of one).

44. *E.g.*, Eckroth v. Pa. Elec., Inc., 12 A.3d 422, 427 (Pa. 2010). Indeed, courts have long held defendants liable for transmitting diseases. *See also* Earle v. Kuklo, 98 A.2d 107 (1953); Skillings v. Allen, 143 Minn. 323 (1919); Hendricks v. Butcher, 129 S.W. 431 (Mo. Ct. App. 1910); Kliegel v. Aitken, 69 N.W. 67 (1896).

45. *See, e.g.*, Mussivand v. Davis, 544 N.E.2d 265, 273 (Ohio 1989) (holding that a defendant proximately caused his lover's husband's venereal disease by infecting his lover).

COVID will not always be possible.[46] In such cases, causation may present an insurmountable barrier.[47]

Breach, in turn, will generally be difficult to establish. Determining whether a defendant has breached a duty of care is a fact- and context-dependent inquiry.[48] A jury must determine what level of COVID-19 precautions a reasonable person would take, which will be some function of prevailing public health guidance, the common precautions taken in the community, and the riskiness of the activity that the plaintiff and defendant were engaged in at the time that exposure occurred.[49] Some juries may find that those who declined to wear masks, sanitize, or practice social distancing breached their duty of care.

Finally, while in many cases it will be straightforward that damages are available, in many cases available damages will be too small for lawsuits to be economically sensible. Courts routinely compensate plaintiffs with money damages for health injuries.[50] The problem for would-be plaintiffs is that most who fall ill with COVID-19 experience only moderate flu-like symptoms. Most patients would not sue, because the legal fees would exceed the damages that an individual could recover.[51] To be sure, some plaintiffs may bring COVID-19 suits even if they expect to receive fewer damages than the legal fees they incur to vindicate a belief that exposing others to COVID-19 is condemnable.[52] Such lawsuits can serve to inform subsequent actors

46. Richards, *supra* note 8, at 504 ("[W]ithout more research and reliable protocols to limit transmission, there is an inability to trace a particular plaintiff's infection to a single source in order to establish causation.").

47. Timothy D. Lytton, *Responsive Analysis: Public Health Federalism and Tort Reform in the U.S. Response to COVID-19*, 71 DEPAUL L. REV. 417, 421 (2022).

48. *E.g.*, Hodges v. Hertz Corp., 351 F. Supp. 3d 1227, 1247 (N.D. Cal. 2018) ("Unlike the other elements of negligence—breach, injury, and causation—which are necessarily fact-dependent, the '[a]nalysis of duty occurs at a higher level of generality.'").

49. *See, e.g.*, Sinai v. Polinger Co., 498 A.2d 520, 531 (D.C. 1985) (reasoning that the standard of care is flexible and changes with the circumstances).

50. *E.g.*, Larson v. Johns-Manville Sales Corp., 399 N.W.2d 1, 9 (Mich. 1986) (permitting suits for money damages for plaintiffs that developed cancer in response to asbestos exposure).

51. Reciprocally, most plaintiffs' attorneys who work on a contingency fee basis would be unwilling to accept a case for such a small amount. *Cf.* SHAVELL, *supra* note 9 (comparing the effects of the British rule, under which a prevailing party recovers attorney's fees, and the American rule, under which each party bears its own legal costs, on the likelihood that a plaintiff sues).

52. Craig Clough, *LA Judge Sued Over 'Super-Spreader' Hearings Amid Virus*, LAW360 (Feb. 9, 2021, 10:41 PM), https://www.law360.com/articles/1353906/la-judge-sued-over-super-spreader-hearings-amid-virus [https://perma.cc/8WB6-S8NH].

that exposing others to the novel coronavirus is unacceptable, seeking to affect future behavior by setting norms rather than financial deterrence.[53] But the small potential recovery will deter most individuals from bringing suit, limiting the group of potential plaintiffs to the estate of deceased individuals or those who experienced extended hospital stays.

b. Premises liability

A plaintiff that can identify where someone exposed him to the coronavirus—rather than who exposed them to it—may have a viable premises liability claim.[54] In general, a land owner owes a duty of reasonable care to individuals who enter the premises both regarding the possessor's conduct that creates risks and any conditions on the land that pose risks to entrants.[55] In some states, the duty expands or contracts based on whether the individual entering the premises is an invitee, licensee, or trespasser, though the modern trend collapses the premises liability inquiry into a general reasonableness standard.[56] The first duty—to take reasonable care in the owner's own conduct—is just a particular application of the general duty individuals owe when engaging in foreseeably risky activities.[57] The second duty, to take care regarding conditions on the property that pose risks to entrants, obligates a landowner to take reasonable steps to ensure that individuals on the property do not suffer injury, including by contracting an infectious disease.[58] Determining whether a premises

53. *See* RICHARD H. MCADAMS, THE EXPRESSIVE POWERS OF LAW: THEORIES AND LIMITS 169–99 (2015) (exploring the role of legal enforcement in communicating social norms).

54. *E.g.*, Mini Kapoor & Julie Pettit, *Innovative Tort Claims in the Wake of COVID-19*, 93 THE ADVOCATE (TEXAS) 27, 28 (2020).

55. RESTATEMENT (THIRD) OF TORTS: PHYS & EMOT. HARM § 51 (2012); *see also, e.g.*, Bisson v. Wal-Mart Stores, Inc., 195 A.3d 707, 714 (Conn. App. 2018) ("To hold the defendant liable for her personal injuries . . . the plaintiff must prove (1) the existence of a defect, (2) the defendant knew or in the exercise of reasonable care should have known about the defect and (3) that such defect had existed for such a length of time that the [defendant] should, in the exercise of reasonable care, have discovered it in time to remedy it." (quoting Palmieri v. Stop & Shop Cos., 927 A.2d 371 (2007)); Zook v. Brookshire Grocery Co., 302 S.W.3d 452, 454 (Ct. App. Tx. 2009) ("In a premises liability suit the traditional test of the conduct of a reasonably prudent person is simply tailored to a specific category of defendants-owners or occupiers of premises.").

56. RESTATEMENT (SECOND) OF TORTS §§ 343, 343A (1965); *cf. also, e.g.*, Steignman v. Outrigger Enterprises, Inc. 267 P.3d 1238, 1241, 1247–52 (Haw. 2011) (holding that the classic known-or-obvious danger defense to an invitee's claim violated the state's comparative negligence statute).

57. *Zook*, 302 S.W.3d at 454.

58. *Cf.* Russell v. Call/D, LLC, 122 A.3d 860, 872–73 (D.C. 2015) (affirming grant of summary judgment against plaintiff for failing to demonstrate

liability claim arises from a breach of the first duty requires the same analysis as an ordinary negligence claim.[59]

The duty to take reasonable care to prevent any conditions that pose risks to entrants may require a landowner to take a variety of actions to protect individuals who visit the landowner's property. Indeed, retailers implemented many different measures to protect customers during the pandemic, like imposing mask requirements, limiting the number of customers that can be in a store at once, dedicated hours for at-risk customers, requiring customers to remain socially distanced from each other, and increasing the frequency and intensity of cleanings.[60] The extent to which landowners comply with public health guidance is probably relevant.[61] Social gatherings have proven to be a significant driver of COVID-19 infections, suggesting that reasonable hosts would skip hosting an event altogether or host only outdoor events.[62] Ultimately, the totality of the circumstances will determine whether a particular defendant is liable under a premises liability theory, but the fact that an owner could be liable when one

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that contaminated water in an apartment building caused his Legionnaires' disease).

59. *Compare, e.g.*, Foster v. Costco Wholesale Corp., 291 P.3d 150, 156 (Nev. 2012) ("Thus, under the Restatement (Third), landowners bear a general duty of reasonable care to all entrants, regardless of the open and obvious nature of dangerous conditions. The 'duty issue must be analyzed with regard to foreseeability and gravity of harm, and the feasibility and availability of alternative conduct that would have prevented the harm.'"), *with* Washington v. Louisiana Power & Light Co., 555 So. 2d 1350, 1353 (La. 1990) ("[T]he power company's duty to provide against resulting injuries, as in similar situations, is a function of three variables: (1) the possibility that the electricity will escape; (2) the gravity of the resulting injury, if it does; (3) the burden of taking adequate precautions that would avert the accident.").

60. *E.g.*, Brian Cornell, *An Update on How We're Supporting Our Guests and Team, From CEO Brian Cornell,* TARGET (Mar. 17, 2020) https://corporate.target.com/news-features/article/2020/03/target-hours-coronavirus [https://perma.cc/P95R-65UL].

61. *E.g.*, *Quick Links to COVID-19 Community Mitigation Strategies and Tools: Resources for States, Tribes, Territories, and Localities*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://archive.cdc.gov/#/details?q=Quick%20Links%20to%20COVID-19%20Community%20Mitigation%20Strategies%20and%20Tools:%20Resources%20for%20States,%20Tribes,%20Territories,%20and%20Localities&start=0&rows=10&url=https://www.cdc.gov/coronavirus/2019-ncov/downloads/php/open-america/community-mitigation-quicklinks.pdf [https://perma.cc/U6BM-X98Q].

62. *See* Christopher M. Whaley et al., *Assessing the Association Between Social Gatherings and COVID-19 Risk Using Birthdays*, 181 J. AM. MED. ASS'N 1090, 1091–92 (2021); *Quick Links to COVID-19 Community Mitigation Strategies and Tools: Resources for States, Tribes, Territories, and Localities*, *supra* note 61 (discouraging hosting indoor events).

invitee infects another will likely give many would-be hosts and retailers pause.

3. Defective products

Finally, individuals who use faulty personal protective equipment or COVID-19 tests could bring claims against manufacturers.[63] A product gives rise to a products liability claim if "at the time of distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings."[64] A manufacturing defect occurs if a particular unit fails to adhere to its manufacturer's design.[65] States vary widely on how they determine whether a design defect exists, but plaintiffs generally can recover if the product's design is riskier than consumers would expect or if the utility of the product does not justify the risks that it imposes on customers.[66] And an inadequate warning defect exists if the manufacturer could have, but failed to, reduce the foreseeable risks of the product by providing reasonable instructions or warnings and the omission of the warnings rendered the product not reasonably safe.[67] Manufacturers are strictly liable for any damages that a defective product causes.[68]

Manufacturers of personal protective equipment that individuals commonly used during the pandemic could be subject to all three varieties of products liability claims.[69] For example, if an individual contracted COVID-19 because a particular batch of sanitizer contained no alcohol and its use failed to sanitize a contaminated surface, she could recover for a manufacturing defect. Likewise, consumers might expect that masks with vents or other openings provide as much protection as tight-fitting masks with filters, thereby unknowingly facing a greater risk of infecting themselves or others. A court could

63. *E.g.*, Gutierrez v. Medtronic PLC, 2023 WL 376014 (D.N.J. 2023) (recommending dismissal of plaintiff alleging that a defective ventilator was used during COVID-19 treatment).

64. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 (1998).

65. *Id.*

66. *See* Clayton J. Masterman & W. Kip Viscusi, *The Specific Consumer Expectations Test for Product Defects*, 95 IND. L. J. 183, 191–96 (2020) (reviewing contemporary design defect jurisprudence). Fifteen states exclusively apply the consumer expectations test. Eighteen states exclusively apply the risk-utility test. Nine states recognize both tests. Eight states apply a unique test. *See id.*188–89 n.17–20 (collecting references).

67. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 (1998).

68. Denny v. Ford Motor Co., 662 N.E. 2d 730, 735 (N.Y. 1995) ("Under New York law, a design defect may be actionable under a strict products liability theory if the product is not reasonably safe.").

69. *E.g.*, Kapoor & Pettit, *supra* note 54, at 29.

find that a company manufacturing such masks is liable for a design defect under the consumer expectations test.

* * *

Each of these tort doctrines can provide a basis for recovery when someone exposes another to the novel coronavirus. To be sure, plaintiffs are not guaranteed to prevail under any of these doctrines. A jury might find that turning away patients when a hospital is over capacity is reasonable. A defendant retailer may act reasonably simply by requiring customers to wear masks. Causation may be impossible to prove for plaintiffs who encountered the virus after visiting multiple stores or while wearing a faulty mask.[70] Systematically, however, the risk of COVID-19 litigation and the incentives such litigation present to individuals and businesses are noteworthy, as is the rational fear of suit that many actors may have. As the next section discusses, many states recognized how the threat of such lawsuits could affect actors and moved to protect would-be defendants.

B. Policy responses to the pandemic

State and local governments swiftly responded to the COVID-19 pandemic. By the end of April 2020, most states had imposed stay-at-home orders, requiring individuals to remain in their residences unless necessary.[71] States ordered non-essential businesses to cease operations.[72] When people did leave home, nearly all states required them to wear masks to reduce virus transmission.[73] Schools closed,[74]

70. *Id.* at 28.

71. *See* Renan C. Castillo et al., *The Effect of State-Level Stay-At-Home Orders on COVID-19 Infection Rates*, 48 AM. J. INFECTION CONTROL 958, 958 (2020).

72. *See* Erin Schumaker, *Here Are the States That Have Shut Down Nonessential Businesses*, ABC NEWS (April 3, 2020, 7:58 PM), https://abcnews.go.com/Health/states-shut-essential-businesses-map/story?id=69770806 [https://perma.cc/P3R2-C3AD] (noting that 46 states and D.C. closed recreational businesses, personal care retailers, and more as of April 2020).

73. Wei Lyu & George L. Wehby, *Community Use of Face Masks and COVID-19: Evidence From a Natural Experiment of State Mandates in the U.S.*, 39 HEALTH AFFS. 1419, 1420–21 (2020).

74. Katherine A. Auger et al., *Association Between Statewide School Closure and COVID-19 Incidence and Mortality in the U.S.*, 324 J. AM. MED. ASS'N 859, 859–61 (2020).

religious gatherings dissipated,[75] and evictions paused.[76] Seemingly overnight, states upended society to fight the rapidly spreading virus.[77]

The pandemic, and many of the measures taken in response to it, imposed a tremendous economic cost on the United States. Gross domestic product decreased by 32% in the second quarter of 2020.[78] Millions of people made claims for unemployment insurance, peaking at 25 million initial and continued claims in May 2020.[79] The employment-to-population ratio in April 2020 was 16% lower than historical trends predicted in the absence of the pandemic.[80] Economists have estimated that roughly 25% of the increase in unemployment was attributable to stay-at-home orders and the economic activity they suppressed.[81] The stock market crashed, oil prices plummeted, and business bankruptcies spiked.[82] In response to the economic turmoil, Congress passed multiple

75. *E.g.*, Tandon v. Newsom, 141 S. Ct. 1294, 1297–98 (2021) (per curiam).

76. Ann O'Connell, *Emergency Bans on Evictions and Other Tenant Protections Related to Coronavirus*, NOLO, https://www.nolo.com/evictions-ban#:~:text=As%20of%20July%202022%2C%20there,eviction%20diversion%20programs)%20in%20place [https://perma.cc/WHM7-L8VX] (collecting links to state eviction moratoria).

77. While many of those interventions likely decreased the spread of COVID-19, they also had a variety of secondary negative effects on public health. *See, e.g.*, Frank Griffin, *Liberty and Health*, 44 U. ARK. LITTLE ROCK L. REV. 1, 43–47 (2021) (arguing that stay-at-home mandates and other interventions left individuals socially isolated, medically distressed, and exacerbated inequalities in the healthcare system).

78. *Gross Domestic Product, Second Quarter 2020 (Second Estimate) Corporate Profits, Second Quarter 2020 (Preliminary Estimate)*, BUREAU ECON. ANALYSIS (Aug. 27, 2020), https://www.bea.gov/news/blog/2020-08-27/gross-domestic-product-second-quarter-2020-second-estimate-corporate-profits [https://perma.cc/UQ5B-PGVL].

79. U.S. DEP'T OF LABOR, 2020 UNEMPLOYMENT INSURANCE WEEKLY CLAIMS DATA.

80. Victorai Udalova, *Initial Impact of COVID-19 on U.S. Economy More Widespread Than on Mortality*, U.S. CENSUS BUREAU (Mar. 8, 2021), https://www.census.gov/library/stories/2021/03/initial-impact-covid-19-on-united-states-economy-more-widespread-than-on-mortality.html [https://perma.cc/8LM4-HN47].

81. ChaeWon Baek et al., *Unemployment Effects of Stay-at-Home Orders: Evidence from High Frequency Claims Data* 14 (IRLE Working Paper, Paper No. 101-20, 2020, https://irle.berkeley.edu/wp-content/uploads/2020/04/Unemployment-Effects-of-Stay-at-Home-Orders.pdf [https://perma.cc/WFE8-3GYL].

82. Kimberly Amadeo, *How COVID-19 Has Affected the U.S. Economy*, BALANCE, https://www.thebalance.com/how-covid-19-has-affected-the-us-economy-5092445#stock-market-crash-and-rebound [https://perma.cc/D8A9-W6L7].

bills to provide direct stimulus payments and supplement unemployment insurance payments.[83]

As the economic consequences of the pandemic mounted, governors issued executive orders and legislatures passed statutes to protect health care providers and essential businesses from the tort consequences of operating during the pandemic. The governor of Maryland acted first, on March 5, 2020, by ordering that health care providers qualified for civil and criminal immunity while acting in good faith.[84] Other governors quickly followed suit. By April 16, fourteen other governors had issued executive orders providing broad immunity for health-care workers.[85] State legislatures moved a little more slowly. Kentucky passed the first COVID-19 tort reform statute on March 30, 2020.[86] Like Maryland's executive order, the Kentucky statute focused on health-care provider liability.[87] As of January 2022, 46 states have implemented some form of COVID-19 tort reform. Table 1 below provides the date that each state first adopted each type of reform.[88]

83. *See* ANNA PRICE & LOUIS MYERS, UNITED STATES: FEDERAL, STATE, AND LOCAL GOVERNMENT RESPONSES TO COVID-19 3–5 (Nov. 2020), https://tile.loc.gov/storage-services/service/ll/llglrd/2020725113/2020725113.pdf [https://perma.cc/B4G8-CKL9].

84. STATE OF MARYLAND, PROCLAMATION: RENEWAL OF DECLARATION OF STATE OF EMERGENCY AND EXISTENCE OF CATASTROPHIC HEALTH EMERGENCY – COVID-19, 4 (2020), https://health.maryland.gov/pharmacy/docs/News%20Updates/Governor%20Renewal-of-State-of-Emergency-10.06.20%20(1).pdf [https://perma.cc/X7XV-4396]; *see also* MD. CODE ANN., PUB. SAFETY § 14-3A-06 (LexisNexis 2023) (describing the scope of health care provider immunity in a health care emergency).

85. *See Covid-19 Resources: Gubernatorial Executive Orders*, AM. TORT REFORM ASS'N, https://www.atra.org/covid-19-resources/state-eo/ [https://perma.cc/724R-T2Z3].

86. 2020 Ky. S.B. 150.

87. *Id.*

88. *Latest Summary of COVID-19 Legislation & Executive Orders*, AM. TORT REFORM ASS'N (Aug. 31, 2021), http://www.atra.org/covid-19-resources/ [https://perma.cc/L65Z-MLXD].

Table 1: COVID-19 Tort Reform Adoption by State

State	Healthcare provider immunity	Exposure liability immunity	Products liability immunity
Alabama	May 8, 2020	May 8, 2020	May 8, 2020
Alaska	April 9, 2020	May 1, 2021	April 9, 2020
Arizona	April 9, 2020	April 5, 2021	
Arkansas	April 13, 2020	June 15, 2020	
Colorado	November 23, 2020		
Connecticut	April 7, 2020		
DC	April 10, 2020		
Delaware	April 23, 2020		
Florida	March 29, 2021	March 29, 2021	
Georgia	April 14, 2020	August 5, 2020	August 5, 2020
Hawaii	April 16, 2020		
Idaho		August 27, 2020	
Illinois	May 13, 2020		
Indiana	April 29, 2021	February 18, 2021	February 18, 2021
Iowa	April 9, 2020	June 18, 2020	April 9, 2020
Kansas	April 22, 2020	June 8, 2020	June 8, 2020
Kentucky	March 30, 2020	April 11, 2021	March 30, 2020
Louisiana		June 13, 2020	June 13, 2020
Maryland	March 5, 2020		
Massachusetts	April 17, 2020		
Michigan	March 29, 2020	October 22, 2020	
Mississippi	April 10, 2020	July 8, 2020	July 8, 2020
Missouri	August 28, 2021	August 28, 2021	August 28, 2021
Montana	February 10, 2021	February 10, 2021	February 10, 2021
Nebraska		May 25, 2021	
Nevada	April 1, 2020	August 11, 2020	
New Jersey	April 1, 2020	July 1, 2021	
New York	March 23, 2020		
North Carolina	May 4, 2020	May 4, 2020	
North Dakota	April 23, 2021	April 23, 2021	April 23, 2021
Ohio	September 14, 2020	September 14, 2020	
Oklahoma	May 12, 2020	May 21, 2020	May 21, 2020
Pennsylvania	May 6, 2020		
Rhode Island	April 10, 2020		
South Carolina	April 28, 2021	April 28, 2021	April 28, 2021
South Dakota	February 17, 2021	February 17, 2021	February 17, 2021
Tennessee	July 1, 2020	August 17, 2020	August 17, 2020
Texas	June 14, 2021	June 14, 2021	June 14, 2021
Utah	April 22, 2020	May 4, 2020	
Vermont	April 10, 2020		
Virginia	April 28, 2020		
Washington	May 21, 2021		
West Virginia	March 19, 2021	March 19, 2021	March 19, 2021
Wisconsin	April 15, 2020	February 25, 2021	
Wyoming	May 20, 2020	May 20, 2020	

The most common reform that states enacted protected health-care providers from lawsuits. As of January 2022, the legislatures or governors of 41 states and D.C. provided pandemic-related immunity to health care providers.[89] For example, the very first COVID-19 statute that a state legislature passed provided immunity from negligence suit for any "health-care provider who in good faith renders care or treatment of a COVID-19 patient during the state of emergency . . . if the health-care provider acts as an ordinary, reasonable, and prudent health care provider would have acted under the same circumstances."[90] It is peculiar that an "immunity" statute protects health care providers if they follow the same "ordinary, reasonable, and prudent health care provider" standard that would apply absent such a statute.[91] Other provisions in the statute, however, dictate protected activities including "prescrib[ing] or dispens[ing] medicines for off-label use to attempt to combat the COVID-19 virus," "provid[ing] health care services . . . that are outside of the provider's professional scope of practice," and "utiliz[ing] equipment or supplies outside of the product's normal use for medical practice and the provision of health care services."[92] By establishing that defendants are immune from malpractice and negligence lawsuits arising out of off-label drug use, out-of-scope practice, and abnormal equipment use, the statute provides robust protection for practitioners who experiment with novel treatments or who practice under suboptimal conditions.

Other states avoided defining acceptable courses of conduct, and instead relaxed the general duty of care that providers owed to patients. Alabama's statute, for example, provides that "absent wanton, reckless, willful, or intentional misconduct, a health care provider is not liable for any damages, injury, or death alleged to have been caused by an act or omission of the provider . . . that resulted from . . . a lack of resources caused by, or was done in response to the Coronavirus pandemic or the state's response to the pandemic."[93] Recklessness is a more forgiving standard than negligence, allowing providers in Alabama to provide care with a reduced risk of liability.[94]

The next category of reforms made it significantly more difficult for a plaintiff to successfully sue a defendant individual or business for

89. *Id.* at 1–2.

90. 2020 Ky. S.B. 150 § 5(b).

91. *Id.*

92. *Id.* at § 5(b)(1)–(3).

93. ALA. CODE § 6-5-794 (2023).

94. *Ex Parte* Anderson, 682 So. 2d 467, 469–70 (Ala. 1996) ("Negligence and wantonness, plainly and simply, are qualitatively different tort concepts of actionable culpability. Implicit in wanton, willful, or reckless misconduct is an acting, with knowledge of danger, or with consciousness, that the doing or not doing of some act will likely result in injury.").

exposing them to the virus. For example, Louisiana's statute provided immunity from civil damages resulting from exposure to COVID-19 in "business operations unless the person . . . failed to substantially comply with the applicable COVID-19 procedures established by the federal, state, or local agency which governs the business operations and the injury or death was caused by . . . gross negligence or wanton or reckless misconduct."[95] The statute provides similarly broad protection for anyone who hosts a "tradeshow, convention, meeting, association produced event, corporate event, sporting event, or exhibition of any kind, unless such damages were caused by . . . gross negligence or willful or wanton misconduct."[96] These safe harbor statutes, much like the medical immunity statutes requiring reasonable care, can operate like negligence standards, as they provide immunity to all individuals taking a level of care that the statute defines, rather than the more amorphous reasonable person standard. The key difference between the exposure liability reform statutes and the general negligence standard is the definition of certain safe harbor actions.[97] While the often-nebulous negligence standard allows a jury to determine what precautions are reasonable after an injury has already occurred, the reform statute protects businesses from liability if they take a defined set of actions.[98] As of January 2022, 32 states shielded defendants from exposure claims arising out of ordinary negligence or premises liability.[99]

The final reforms this Article examines protect manufacturers from lawsuits alleging that their products were defective. As of January 2022, 18 states had shielded manufacturers from such suits.[100] In May 2020, Oklahoma provided that "any person that designs, manufactures, labels, sells, distributes, or donates disinfecting and cleaning supplies or personal protective equipment during and in response to the COVID-19 public health emergency that does not make such products in the ordinary course of business shall not be liable in a civil action alleging personal injury, death or property damage caused by or resulting from the product's manufacturing or design, or a failure to provide proper instructions or sufficient warnings."[101] Tennessee, in a bill that provided broad immunity for most COVID-19 related claims, provided that "there is no claim against any person for loss, damage, injury or death"

95. 2020 La. S.B. 435 § 773(A).

96. *Id.* § 1(B).

97. *See id.*

98. *See id.*

99. *See Latest Summary of COVID-19 Legislation & Executive Orders*, *supra* note 88.

100. *See id.*

101. 2020 Okla. Sess. Laws. S.B. 1947 § 1(C).

against a person who "provid[es] services or products in response to government appeal or repurpose[s] operations to address an urgent need for personal protective equipment, sanitation products, or other products necessary to protect the public," except if the plaintiff can prove "gross negligence or willful misconduct" by "clear and convincing evidence."[102] Such statutes sought to alleviate ongoing shortages of protective equipment and testing supplies by incentivizing firms that were capable of producing such equipment to enter the market.[103]

These three categories of statutes—medical tort reforms, exposure claim reforms, and products liability reforms—promote distinct policy goals.[104] Medical tort reforms encourage medical professionals to experiment and discover treatments for a novel disease and allow providers flexibility to provide care to more individuals. They also signal moral support to the providers who were working to protect society from the pandemic, demonstrating a collective moral sense that letting plaintiffs sue such workers and institutions was inappropriate. Exposure reforms, in turn, encourage businesses to meet the standard of care public health guidance recommended while protecting businesses from costly legal claims, potentially improving macroeconomic outcomes. However, those laws may also incentivize individuals to take less care to avoid infecting others due to the lower legal standard that applies. Product liability reforms, in turn, encourage firms that would not manufacture protective equipment to do so, alleviating shortages of necessary supplies and decreasing their prices. Accordingly, all three laws may affect public health outcomes. The next Part explores the potential effects of these statutes, providing a framework for evaluating the statutes and predicting their empirical effects.

II. COVID-19 TORT REFORM: A CONCEPTUAL FRAMEWORK

This Part presents a framework for predicting the effects of COVID-19 tort reform. The theoretical model motivates the empirical model in Part III by identifying testable hypotheses. In some cases, the model explains why the anticipated effect of the statutes is ambiguous, necessitating empirical investigation to determine which of multiple competing effects dominate. Section A considers the effects of liability

102. TENN. CODE ANN. § 29-34-802(a)(G).

103. *See generally* Jennifer Cohen & Yana van der Meulen Rodgers, *Contributing Factors to Personal Protective Equipment Shortages During The COVID-19 Pandemic*, 141 PREVENTIVE MED. 1 (2020) (analyzing the factors that caused PPE shortages in the early pandemic and finding that shortages caused hospitals to attempt a variety of workarounds, including modifying ventilators to serve multiple patients); Eric M. Swalwell & R. Kyle Alagood, *Biological Threats Are National Security Risks: Why COVID-19 Should be a Wakeup Call for Policy Makers*, 77 WASH. LEE L. REV. 217, 236 (2021).

104. *See infra* Part II.

and immunity on health care providers in a pandemic. Section B considers the choices of individuals and business owners who choose a level of care to reduce the risk of spreading or contracting COVID-19. Section C considers the incentives of a firm producing protective equipment during the pandemic.

A. Medical liability

Consider a representative health care provider.[105] For ease of exposition, this Article will refer to the provider as a hospital, but the analysis is similar when considering an individual provider such as a physician.[106] Patients come to the hospital seeking care, for which it charges some fee. The hospital chooses some level of care to take when treating each patient. More care decreases the risk that the patient experiences an adverse event. The hospital faces some cost of providing care to patients, like the wages it pays employees and the prices it pays for medical supplies. The hospital's total costs rise as it treats more patients and as it takes more care while treating patients. In this model of a hospital's decision-making, the hospital will choose a quantity of patients to treat and a level of care to take that maximizes its profits.[107]

Under this framework, hospitals choose some number of patients to treat and the level of care to take when they are subject to a traditional malpractice liability regime. The hospital faces a risk of lawsuit if the hospital takes too little care with any patient.[108] Due to resource constraints, including the size of the facilities and labor force, there is a maximum number of patients who the provider can treat without

105. *See* SHAVELL, *supra* note 9, at 193–95.

106. *See* Popovich v. Allina Health, 946 N.W.2d 885, 888 (Minn. 2020) (finding that hospitals can be liable in a medical malpractice or negligence action either due to their own failure to take adequate care or they can be vicariously liable for the malpractice of practitioners they employ or contract with).

107. To be sure, not all health-care providers strictly maximize profits. Nonprofit hospitals exist. Most physicians want their patients to have healthy outcomes regardless of their own pecuniary interests. But the profit-maximization model is a tractable way to examine the incentives that providers face. Even if the discussion were expanded to consider altruistic providers, the fundamental observations about the effect of eliminating liability for providers would remain largely unchanged.

108. Devitre v. Orthopedic Ctr. of St. Louis, LLC, 349 S.W.3d 327, 335 (Mo. 2011) (*en banc*) (discussing malpractice liability). This article uses "risk" to encompass both the probability of suit and the expected damages of suit. Generally, the expected liability from a particular course of care will vary with the benefit the patient received, or could have received, from the treatment as well as the relative benefits and risks of other available treatments.

falling below the level of care necessary to avoid liability.[109] Accordingly, the number of patients the hospital treats, and the level of care it takes in treating them, will vary with the level of care necessary to avoid liability. If courts set the medical malpractice standard efficiently, the level of care necessary to avoid liability will be the one that balances the benefit to the patient of greater care with the cost to the hospital of providing that care.[110] More concretely, if another procedure, test, or medication will decrease the risk of an adverse event by more than the cost to the hospital of providing that service, the hospital will provide it. And so, the profit-maximizing hospital will provide care to as many patients as profitably possible at the exact level of care necessary to avoid liability.[111] Taking greater care would impose costs on the hospital without providing any additional revenue, while taking less care would expose the hospital to unprofitable liability.

During a pandemic, the quantity of patients who seek treatment is likely to exceed the hospital's capacity. Throughout the pandemic, many hospitals struggled to provide care to as many patients as have sought it. Some hospitals turned patients away as the number of COVID-19 patients seeking hospitalization exceeded hospital capacity.[112] Other hospitals told patients they would only treat individuals whose symptoms were sufficiently bad.[113] In so doing,

109. In other words, there are levels of care and number of patients for which the cost of treating one more patient at that level of care is impossibly high.

110. *See* SHAVELL, *supra* note 9, at 195.

111. *Id.* at 193–95.

112. Charles Ornstein & Mike Hixenbaugh, *Houston Hospitals Are Increasingly Turning Away New Patients as Coronavirus Overwhelms Emergency Rooms*, TEXAS TRIBUNE (July 10, 2020, 1:00 PM) https://www.texastribune.org/2020/07/10/houston-coronavirus-emergency-rooms/ [https://perma.cc/P87B-WDFY]; Reed Abelson, *Covid Overload: U.S. Hospitals Are Running Out of Beds for Patients*, N.Y. TIMES (Nov. 27, 2020), https://www.nytimes.com/2020/11/27/health/covid-hospitals-overload.html [https://perma.cc/9Z2L-L3XV]**;** Dylan Scott, *Americans Are Dying Because No Hopsital Will Take Them*, VOX, https://www.vox.com/coronavirus-covid19/2021/9/14/22650733/us-covid-19-hospitals-full-texas-alabama [https://perma.cc/68HA-TVM3]; Madeline Heim & Natalie Eilbert, *'We're Paralyzed': Wisconsin Hospitals Struggle to Transfer and Place New Patients*, POST CRESCENT (Dec. 3, 2021, 8:23 PM), https://www.postcrescent.com/story/news/2021/12/03/covid-wisconsin-hospitals-turning-away-patients-cases-climb-staffs-struggle/8855404002/ [https://perma.cc/42C4-7KG8].

113. *E.g.*, *When to Go to the Hospital for COVID 19*, ST. LUKE'S, https://www.stlukesonline.org/health-services/service-groups/covid-resources/when-to-go-to-the-hospital-for-covid-19 [https://perma.cc/WKZ3-CP88] (providing guidelines for when COVID-19 is severe enough to merit a hospital visit).

hospitals prioritized accepting patients in the worst condition to minimize fatalities and serious complications.

In addition to those capacity constraints, hospitals faced significant uncertainty as to the appropriate course of care and potential liability.[114] Uncertainty as to the best course of treatment or legal risk will cause hospitals to pursue multiple plausible forms of treatment, in some cases performing treatments with small expected benefits and high costs.[115] The tendency to try multiple different treatments, each of which has an ambiguous probability of improving a patient's condition, in an effort to maximize patient outcomes and avoid liability is not unique to the pandemic, but was likely common during it. For example, early in the COVID-19 pandemic, it was uncertain which patients would benefit from intubation, a costly and intrusive treatment.[116] As a result, intubation rates varied widely by hospital and providers may have intubated many patients unnecessarily.[117] Within the context of this model, the pandemic uncertainty manifests as an increase in the cost to treat patients at the level of care necessary to avoid liability. Because the legal standard for liability determines the level of care that the hospital was taking, increased costs from pandemic uncertainty will cause the hospital to accept fewer patients than they otherwise would. The combined effects of a surge in demand for care and increased costs to meet the negligence standard yields a population of patients who want more treatment but who the hospital will decline to treat.

If health care providers are immune from liability, they will provide services to more patients than when exposed to liability, though that care could be of lower quality.[118] By relaxing the need to treat every patient at a certain level of care, the hospital can profitably treat a greater number of patients. Hospitals that are concerned about liability will be less likely to engage in costly treatments to avoid liability. If the marginal and most costly treatments that hospitals were providing were

114. *E.g.*, Benjamin McMichael et al., *COVID-19 and State Medical Liability Immunity*, HEALTH AFFS. FOREFRONT (May 14, 2020), https://www.healthaffairs.org/content/forefront/covid-19-and-state-medical-liability-immunity [https://perma.cc/8U7W-XA4R].

115. OFFICE OF TECHNOLOGY ASSESSMENT, DEFENSIVE MEDICINE AND MEDICAL MALPRACTICE 1 (1994) ("Most defensive medicine is not of zero benefit. Instead, fear of liability pushes physicians' tolerance for medical uncertainty to low levels, where the expected benefits are very small and the costs are high."); *see also supra* Part I. Section A.1 (describing various treatments that practitioners have tried to implement).

116. Austin J. Parish et al., *Early Intubation and Increased Coronavirus Disease 2019 Mortality: A Propensity Score-Matched Retrospective Cohort Study*, 3 CRITICAL CARE EXPLS. 1, 6 (2021) ("In the early stages of the pandemic, it was uncertain which patients would benefit from early intubation and mechanical ventilation.").

117. *Id.* at 6–7.

118. *See* SHAVELL, *supra* note 9, at 195.

highly effective, then immunizing providers from liability could cause adverse outcomes for patients. In the case of a potentially deadly disease like COVID-19, fatalities could increase. If the marginal treatments were, on average, of little benefit to patients, patient fatality rates would likely remain unchanged. In either case, the number of COVID-19 cases could increase for at least two reasons. First, as hospitals admit more patients, they will test more patients for COVID-19, causing more existing cases to be detected. But more problematically, more patients in the hospital, both COVID positive and otherwise, will likely increase the spread of the disease within this hospital, particularly if the level of care hospitals take decreases.

To be sure, these changes in hospital behavior may cause patients to change their behavior. Until this point, the model has implicitly assumed that patients will always seek care. However, patients may learn over time that hospitals are taking less care with patients, leading to ineffective treatments, worse outcomes, or greater spread within the hospital. But any patient backlash should not be so large that it would cause the number of patients who seek care in the hospital to decrease below the level the hospital treated while subject to the negligence standard. If it were, the decrease in care the hospital took would have been unprofitable, and the hospital would have taken more care to reassure its patients to return. The equilibrium that hospitals and patients reach should yield the hospital admitting more patients and choosing a lower level of care in a pandemic with liability immunity than it otherwise would.

B. Negligent exposure

This Section considers the effect of COVID-19 exposure liability and immunity on individuals and landowners. Consider a hypothetical individual engaged in an activity in which they could become infected with the coronavirus or, if they are already infected, spread it to others.[119] The person could be visiting family, dining indoors, shopping for groceries, or any other activity where they are near others and breathing the same air.[120] Such individuals can take care to reduce the

119. The situation in this section is an extension and application of the unilateral care model in Steve Shavell's *Foundations of Economic Analysis of Law*. The individual's optimization problem is an ordinary unilateral care model augmented with a positive internality of care. *See id.* at 178–82.

120. *About COVID-19*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19.html#:~:text=COVID%2D19%20spreads%20when%20an,eyes%2C%20nose%2C%20or%20mouth [https://perma.cc/PK58-3GQD] ("COVID-19 spreads when an infected person breathes out droplets and very small particles that contain the virus. Other people can breathe in these droplets and particles, or these droplets and particles can land on their eyes, nose,

risk of coronavirus transmission in a variety of ways. They could wear a mask, engage in only outdoor activities with others, be socially distant, get tested shortly before engaging in activity, and so on.[121] Taking any of these precautions decreases an individual's own risk of contracting COVID-19 and the risk of the individual infecting others.[122] Under these assumptions, an individual will choose a level of care to minimize the expected cost of contracting or spreading the virus, minus the cost of taking that care.

If an individual can be liable in negligence for exposing another to the novel coronavirus, they will likely take at least as much care as necessary to avoid liability. Under a negligence rule, the individual will be liable to others he could foreseeably infect with the novel coronavirus if he takes less than the reasonable level of care. If courts set the requisite level of care at the socially efficient level, meaning the level that minimizes the total risk from COVID-19 to susceptible individuals plus the cost of precautions, then individuals will take at least as much care as necessary to eliminate liability under the negligence standard.[123] The reason is the same as it was in the medical liability framework that Section A discussed: taking care below that level exposes the individual to liability that is, by design, a larger cost than taking reasonable care set at the efficient level.

But individuals may take more care than the negligence standard requires. As discussed, virtually all steps that an individual can take to reduce the probability of exposing another to the novel coronavirus will reduce the likelihood that the individual contracts it.[124] In many instances, the marginal risk-reducing measure may yield a larger self-protective benefit than the marginal protection afforded to others. Consider, for example, an individual without symptoms who has socially isolated for the preceding two weeks. His probability of exposing others to the novel coronavirus is vanishingly small. If that individual socializes with someone whose exposure history is uncertain to him, it is more likely that socializing will expose him to the virus than the person with whom he socializes. And so, by taking care to socialize outdoors or socially distance, he benefits himself far more than the other individual. If individuals value self-protective precautions that are more

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or mouth. In some circumstances, these droplets may contaminate surfaces they touch.").

121. *Safe Outdoor Activities During the COVID-19 Pandemic*, MAYO CLINIC, https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/safe-activities-during-covid19/art-20489385#:~:text=In%20areas%20of%20medium%20or,virus%20that%20causes%20COVID%2D19%20 [https://perma.cc/78S9-G7VQ] (outlining steps patients could take to reduce the risk of transmitting the coronavirus).

122. *Id.*

123. *See* SHAVELL, *supra* note 9, at 180–81.

124. *See id.*

careful than the negligence standard demands more than the costs those precautions impose, they will take greater than legally necessary care.

Other factors besides self-protection could also cause individuals to take greater-than-reasonable levels of care. Social and cultural norms, for example, can greatly influence behavior.[125] If an individual is in a city where taking significant precautions is the norm, they may incur a large social sanction by deviating from those behaviors. Fear may cause individuals to overestimate or perceive risks, and react with insufficiently deliberative thought.[126] In those circumstances, the existence of a negligence standard could have no impact on behavior.

COVID-19 tort reform, as a result, might not affect individual behavior at all. Recall that COVID-19 exposure tort reform generally immunized individuals from suit unless they were reckless.[127] Under the classic formulation of recklessness, which requires "knowledge . . . that the doing . . . of some act will likely result in injury," an individual will be liable for exposing another to the novel coronavirus if the individual knows or is willfully blind to the fact the he or she is contagious.[128] A very low level of care is necessary to avoid liability under that standard. For individuals who were taking the minimum level of care necessary to avoid liability under a negligence regime, a relaxed standard may cause them to take less care, potentially even to the minimum level necessary to avoid recklessness. But the change in legal standard should not affect the behavior of individuals who were taking more care than necessary to avoid liability. Individuals would take the same care under a negligence and recklessness standard if self-protection or other non-legal factors primarily motivated the care they took under the negligence standard. Relaxing how much care individuals must take to protect others should have no effect on how much they take to protect themselves. And so, the laws would have no effect on public health. If, however, individuals take less care because of tort immunity, reforms will cause infections to increase. COVID-19 tests, hospitalizations, and deaths will likely rise or remain the same as with infections.

125. Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 911 (1996) ("[R]elevant norms greatly influence behavior.").

126. Peter H. Huang, *Pandemic Emotions: The Good, The Bad, and The Unconscious —Implications for Public Health, Financial Economics, Law, and Leadership*, 16 N.W. J. L. & SOC. POL'Y. 81, 86–102 (2021) (analyzing the ways that fear can influence individual decision-making during pandemics).

127. *See supra* Part II.

128. *Ex Parte* Anderson, 682 So.2d 467, 469–70 (Ala. 1996) ("Negligence and wantonness, plainly and simply, are qualitatively different tort concepts of actionable culpability. Implicit in wanton, willful, or reckless misconduct is an acting, with knowledge of danger, or with consciousness, that the doing or not doing of some act will likely result in injury.").

Next, consider the incentives of a landowner or business choosing the level of care to take during the pandemic. For ease of exposition, this Article will discuss businesses. Like any other institutional actor, assume that a business will choose a level of care to minimize the sum of its expected liability and costs of care. A business can require customers and employees to take certain precautions on the premises. However, doing so imposes costs. The business may need to provide supplies, like masks, to employees. Some customers will find taking care distasteful and will take their business elsewhere.[129] Both employees and customers may imperfectly adhere to rules regarding, for example, mask-wearing and social distancing. Moreover, regardless of any actions the business takes, many customers and employees will take their own precautions to reduce the risk they contract COVID-19.[130] And businesses know that even if an individual contracts COVID-19 while visiting the premises, it is unlikely they could successfully trace it back to the business. Accordingly, the risk of lawsuit approaches zero. Given that the benefit of taking care is small, and the costs are large, many businesses will take little or no precaution when liability is possible.

Because businesses take little to no precaution even when faced with liability, exposure reform laws that provide protections to businesses that take certain steps may unintuitively decrease COVID-19 cases. Recall that many COVID-19 premises liability reform laws established safe harbors for firms following public health guidance.[131] By creating a common set of precautions for businesses to follow, these statutes decrease the enforcement costs that any business faces and increase the likelihood that competitors require the same behaviors of customers and employees. Accordingly, taking care could be less likely to drive customers away and will be more effective. Many businesses may, accordingly, begin taking care in response to laws that nominally relaxed the standard of care. As a result, states imposing such laws may observe a decrease in COVID-19 cases, hospitalizations, and deaths.

129. *Cf. generally* Pouyan Esmaeilzadeh, *Public Concerns and Burdens Associated with Face Mask-Wearing: Lessons Learned From the COVID-19 Pandemic*, 13 PROG. DISASTER SCI. 1 (2022) (reviewing hypothesis of opinions toward mask-wearing).

130. Bettina Maria Zimmermann et al., *Face Mask Uptake in the Absence of Mandates During the COVID-19 Pandemic: A Qualitative Interview Study with Swiss Residents*, 21 BMC PUB. HEALTH 2171 (2021) (investigating what motivates individuals to wear masks in the absence of mandates).

131. *See supra* Part I, Section B; 2020 La. S.B. 435 § 773(A) (protecting from suit "business operations unless the person . . . failed to substantially comply with the applicable COVID-19 procedures established by the federal, state, or local agency which governs the business operations and the injury or death was caused by . . . gross negligence or wanton or reckless misconduct.").

C. Products liability

This Section considers the effect of immunizing manufacturers of personal protective equipment and other medical supplies from products liability lawsuits. Assume that firms producing equipment participate in a competitive market, such that individual firms cannot affect the market price.[132] Instead, they choose some level of output to sell at the prevailing price. Every product, from every manufacturer, has some risk of a product defect. For example, defective protective equipment may be less effective at preventing the spread of COVID-19, such as with a mask or hazmat suit that has holes. Likewise, a defective test could yield an erroneous result more often. Part of the risk is idiosyncratic to a particular article (i.e., the risk of a manufacturing defect) and part of the risk is common across entire product lines from a manufacturer (i.e., the risks of design defects). Manufacturing a less risky product is more costly, and some firms can produce safer products at a lower cost than other firms. Ordinarily, manufacturers are strictly liable for injuries their defective products cause.[133] Accordingly, consumers expect to be fully compensated for any defective product they purchase and will ignore the risk of a defect when deciding whether to purchase the product.[134] In equilibrium, the set of firms with the lowest costs of designing safer equipment will remain in the market and will sell their equipment at cost—including the expected costs of products liability damages and the design and manufacturing costs associated with making a product with a satisfactorily low risk of defect.[135] High-cost manufacturers will not participate in the market, and, in many cases, may manufacture other kinds of goods for which they are lower-cost producers.

If manufacturers are not liable for defective products, as occurred in states that implemented COVID-19 tort reform, more firms will likely enter the market, prices will fall, and there will be more personal protective equipment available. When consumers do not expect compensation from a defective product, they will only purchase products if the value they place on products exceeds both the price of the product and the expected harm of defects.[136] It is likely that most consumers underestimate the risk of defective protective equipment: consumers have a general expectation that products that are meant to

132. *See generally* HAL R. VARIAN, MICROECONOMIC ANALYSIS 215–232 (3d ed. 1992) (demonstrating the properties of firms participating in perfectly competitive markets).

133. *See supra* Part II, Section C.

134. *Accord* SHAVELL, *supra* note 9, at 213–15.

135. *Id.* (explaining that the equilibrium price in a competitive market with strict products liability is the full cost of manufacturing the product plus expected damages).

136. *See* Masterman & Viscusi, *supra* note 66, at 197–98.

reduce risk do so without risk of defect and it will be difficult for most customers to trace any exposure to the defective equipment itself.[137] Firms, for their part, will invest no extra care in reducing defect risks because they have a limited incentive to do so in the absence of liability. The new market equilibrium will yield a lower market price equal to the cost of producing protective equipment without any extra care to prevent defects, assuming customers behave as if they believe the risk of defect is truly zero. More firms can profitably produce masks and other equipment at this lower price than at the strict liability equilibrium price and more protective equipment will be available on the market. So, for example, more COVID-19 tests will be available for individuals to purchase and use.

The effect on cases of COVID-19 and other non-test public health metrics is unclear. The available equipment will have a greater risk of defect, meaning reform could lead to more COVID-19 infections. If lower prices encourage more use of masks or other protective equipment, and the risk of defect is sufficiently small, then liability immunity will benefit public health. But if individuals substituted from taking other precautions—like socializing outdoors or self-isolating—to using protective equipment, benefits may be mitigated. Ultimately, whether one of the competing effects dominates the others, they mitigate each other, or have no effect at all is an empirical question.

* * *

In sum, the law and economics framework used in this Part provides several concrete predictions for the effect of COVID-19 tort reform. To be sure, the stylized analysis in this Part does not cover all relevant components of individual decision-making in the pandemic. Concern for patients motivates health care providers alongside financial concerns. And mask wearing and other precautionary behaviors have moral, political, and cultural significance outside of their impacts on liability. Providing a complete picture of all these moving parts would render the model inscrutable. By focusing on economic considerations, this Part tractably predicts individual behavior. These predictions form the hypotheses for my empirical analysis of COVID-19 tort reform. The next Part presents the model that this Article uses to test these hypotheses.

137. *Cf. id.* at 218–24 (demonstrating that consumers prefer to levy larger fines on safety products that exposed consumers to risk but are willing to assume the same risk when informed about them before purchasing goods).

III. EMPIRICAL METHODOLOGY

The empirical analysis in this Article combines several data sources to study the effects of COVID-19 tort reform. Section A of this Part presents each of these sources and highlights their importance in the empirical model. Section B presents the empirical model in detail.

A. Data sources

This Article's primary data source is the New York Times's repository of COVID-19 cases and deaths in the United States.[138] The data contain daily cumulative COVID-19 infections and deaths for each state.[139] Using these data, weekly COVID-19 cases and deaths by state are constructed.[140] The data span the time period beginning in the week of January 21, 2020, when the first COVID-19 case was detected in the United States, to January 22, 2022.[141] These data are augmented with data on COVID-19 hospitalizations from the Department of Health and Human Services and data on COVID-19 tests from the Johns Hopkins COVID-19 Data Repository.[142] The case, test, hospitalization, and death counts are the dependent variables in the empirical models. These variables have been key public health metrics throughout the pandemic.[143] Case, test, hospitalization, and death counts for past weeks

138. *Coronavirus (Covid-19) Data in the United States (Archived)*, GITHUB, https://github.com/nytimes/covid-19-data [https://perma.cc/8KLH-64QT].

139. *Id.*

140. In some states, the cumulative case count decreases from one day to the next because a state has corrected a reporting error. Collapsing the data to state-by-week observations substantially mitigates the measurement error attributable to data correction. Measurement error in dependent variables will affect the precision of the empirical model and may cause bias depending on the nature of the measurement error. *See* JAN KMENTA, ELEMENTS OF ECONOMETRICS (2d ed. 1997)

141. This end date is selected because at-home tests for COVID-19 became increasingly available in late January 2022. The advent of such tests causes data after this time period to be subject to measurement errors that could attenuate the effects in the empirical model. *See id.*

142. *COVID-19 Reported Patient Impact and Hospital Capacity by State Timeseries*, HEALTHDATA.GOV, https://healthdata.gov/Hospital/COVID-19-Reported-Patient-Impact-and-Hospital-Capa/g62h-syeh [https://perma.cc/WRH4-SXCH]; *COVID-19 Data Repository by the Center for Systems Evidence Science and Engineering (CSSE) at Johns Hopkins University*, GITHUB, https://github.com/CSSEGISandData/COVID-19 [https://perma.cc/NLR8-SS3N].

143. *See, e.g.*, *Coronavirus in the U.S.: Latest Map and Case Count*, N.Y. TIMES, https://www.nytimes.com/interactive/2021/us/covid-cases.html?name=styln-coronavirus&region=TOP_BANNER&block=storyline_menu_recirc&action=click&pgtype=LegacyCollection&variant=0_Cont

are also used as lagged variables in several iterations of the empirical model to implicitly capture individual and policy responses to local pandemic severity.

The primary explanatory variables of interest are the tort laws discussed in Part I and II: COVID-19 medical liability reform laws, COVID-19 exposure reform laws, and COVID-19 product liability reform laws. I identified all such laws using data from the American Tort Reform Association, which has published a report and other resources on tort immunity that states have enacted in response to the COVID-19 pandemic.[144] After identifying all relevant statutes using the Association's data, I reviewed the text of the relevant statutes to confirm their effects. As discussed in Part I, over the course of the pandemic, 42 states have implemented medical liability reforms, 32 states have implemented exposure liability reforms, and 18 states have implemented product liability reforms.[145]

Finally, the empirical model uses other data to account for state characteristics that may confound the estimates. State populations are from the U.S. Census.[146] Data on state mask mandates and stay-at-home orders from the COVID-19 U.S. State Policy Database.[147] Counts of fully vaccinated individuals by state and week are from the CDC.[148]

The result of gathering and combining these data sources is a robust collection of information on the pandemic from January 2020 to January 2022. As the next section discusses, these data permit estimation of the effect of COVID-19 tort reform.

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rol&is_new=false [https://perma.cc/9AAL-Q676] (presenting cases, tests, hospitalization, and death data daily for the entire pandemic).

144. *See Latest Summary of COVID-19 Legislation & Executive Orders*, *supra* note 88.

145. *See supra* Table 1.

146. *Annual Estimates of the Resident Population for the United States, Regions, States, District of Columbia and Puerto Rico: April 1, 2020 to July 1, 2022*, Data set under *State Population Totals and Components of Change: 2020-2023*, U.S. CENSUS BUREAU, https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html [https://perma.cc/TYT5-DB9W].

147. Julia Raifman et. al., *COVID-19 U.S. State Policy Database*, OPENICPSR (Mar. 30, 2022), https://www.openicpsr.org/openicpsr/project/119446/version/V143/view;jsessionid=6B2B4629FED1C2F1E48C6E54CB698074 [https://perma.cc/A4SU-NMA6].

148. *COVID-19 Vaccinations in the United States, Jurisdiction*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://data.cdc.gov/Vaccinations/COVID-19-Vaccinations-in-the-United-States-Jurisdi/unsk-b7fc/about_data [https://perma.cc/S36A-DVYX].

B. Identifying the effects of reforms

This Article identifies the effect of state COVID-19 tort reform laws using a difference-in-differences empirical methodology.[149] Courts and the empirical legal literature routinely use such models to estimate the causal effect of laws and private conduct.[150] To demonstrate how the model works, envision a randomized experiment that gives some individuals and institutional actors immunity to lawsuits arising out of the COVID-19 pandemic. Such a randomized experiment would represent the gold standard for causal inference.[151] A researcher could, for example, examine how tort reform affected self-protective precaution by comparing COVID-19 case counts in immune versus non-immune individuals.

Unfortunately, a true randomized experiment is impossible to administer to test the effects of tort immunity. Instead, the best approach to identifying a causal effect will be to mimic an experiment as closely as possible by identifying treatment and control groups and controlling for confounding factors that interfere with causal inference.[152] Of course, it is impossible to perfectly replicate an experiment, and certain limitations in the analysis will persist. In this Article, the treatment groups will be states that have passed COVID-19 tort reform and the control groups will be states that have not.

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149. *See* Marianne Bertrand et al., *How Much Should We Trust Differences-in-Differences Estimates?*, 119 Q. J. ECON. 249, 250–52 (2004) (describing differences-in-differences models generally).

150. *E.g.*, Messner v. Northshore Univ. Health Sys., 669 F.3d 802, 825, 826 (7th Cir. 2012) (concluding that a differences-in-differences model was an appropriate methodology for an expert to determine the likely impact of a merger); *In re* Chocolate Confectionary Antitrust Litig., Civil Action No. 1:08–MDL–1935, 2013 WL 11305184, at *7–8 (M.D. Pa. May 10, 2013) (discussing an expert's differences-in-differences estimates of price increases that an antitrust conspiracy caused); *see also e.g.*, Benjamin J. McMichael et al., *"Sorry" Is Never Enough: How State Apology Laws Fail to Reduce Medical Malpractice Liability Risk*, 71 STAN. L. REV. 341, 373 (2019) (using a differences-in-differences model to estimate the effect of state apology laws on medical malpractice claims).

151. D. James Greiner, *Causal Inference in Civil Rights Litigation*, 122 HARV. L. REV. 533, 558 (2008). *But see generally* Arthur Schram, *Artificiality: The Tension Between Internal and External Validity in Economic Experiments*, 12 J. ECON. METHODOLOGY 225 (2005) (discussing the inherent tradeoff between internal and external validity presented by using laboratory experiments versus field data).

152. Empirical research designs that replicate as much as possible the random treatments of a laboratory experiment are often referred to as quasi-experimental. *E.g.*, Jillian B. Carr, *Estimating the Effects of Police Technology Using Quasi-Experimental Methods*, 8 J. BENEFIT-COST ANALYSIS 360–364 (2017) (exploring differences-in-differences approaches to studying the effect of policy technology like license plate readers).

Unlike in a randomized experiment, simply comparing average outcomes between the treatment and control groups will not be sufficient to identify causal effects. States that have passed COVID-19 tort reforms will exhibit different public health metrics from states that do not pass such tort reforms. Some of that difference may be due to the passage of the laws, and some will be due to other factors.[153] Those other factors pose an identification problem, as many characteristics may be associated with both the passage of the law and relevant outcomes. The existence of such characteristics will bias estimates of the effect of COVID-19 tort reform unless the model accounts for their influence.[154] For example, states that pass COVID-19 tort reform are, on average, less populated than states that do not, and more populated states tended to have more COVID-19 cases. In 2021, states that passed any of the three laws this Article analyzes had an average population of approximately 6 million, while states that did not have an average population of 8.3 million. Roughly 5.7 million people living in states with below-median population have tested positive for COVID-19, compared to roughly 32.9 million in states with above-median population. Comparing COVID-19 cases in states with reform to those without it could attribute the difference in case counts to the laws rather than differences that exist because of population differences. Any empirical estimates must, accordingly, account for state-level characteristics that associate with the variables of interest.

Likewise, while comparing treated states before and after the passage of a law would eliminate many of the confounding differences between states that passed COVID-19 tort reform and those that did not, a simple before-and-after comparison introduces problems of its own. Comparing Louisiana's COVID-19 cases and unemployment claims before and after it passed its tort reform would not suffer from the same problems as comparing Louisiana to another state because, for example, Louisiana's population will be roughly constant over a two-year period. The problem is that time itself presents a confounding variable. COVID-19 cases were higher in December 2020 than April 2020, as was the number of states that had passed a law providing immunity from negligent exposure suits. A simple before and after comparison of states that passed immunity laws would mistakenly credit changes attributable to general time trends to the passage of the law.

153. For example, states that passed any COVID-19 tort reform had 23,000 weekly new COVID-19 cases and 2.6 new COVID-19 lawsuits, while states that did not pass any reform had 31,000 weekly new cases and 8.1 new COVID-19 lawsuits. *See supra* Part III Section A for the data sources for these calculations.

154. JEFFREY WOOLDRIDGE, INTRODUCTORY ECONOMETRICS: A MODERN APPROACH 88–91 (5th ed. 2013).

The analysis identifies the effect of the laws by combining the insights from comparing treated states to untreated states and treated states before and after states enforce the law. To illustrate how the model works, consider Missouri and South Carolina as examples. South Carolina's medical reform law became effective at the end of April 2021.[155] Both states are demographically similar: the median income in both states is close to $40,000, the mean age in both states is roughly 40 years, approximately 50-55% of their populations live in urban areas, and roughly 70-80% of their population is white.[156] Individuals in both states largely vote Republican, other than in their largest cities.[157]

The difference-in-difference model estimates the effect of South Carolina's medical reform law by comparing Missouri and South Carolina's COVID-19 cases before and after South Carolina's law became effective. In April 2021, 4,400 individuals in Missouri contracted COVID-19 per week—72 cases per 100,000 state residents. In that same month, 6,100 individuals per week contracted COVID-19 in South Carolina, or about 118 cases per 100,000 residents. In the final week of April, South Carolina's law providing defendants immunity from medical liability, exposure claims, and products liability claims related to COVID-19 became effective.[158] Missouri also passed COVID-19 tort reform addressing all three types of claims, but it became effective far later, in August 2021.[159] In May, Missouri and South Carolina both had 3,300 new weekly cases on average (54 and 65 cases per 100,000 residents). South Carolina's decrease of 2,800 new weekly cases and 53 cases per 100,000 individuals between April and May reflects both the effects of its reform laws and the general decrease in COVID-19 cases that occurred nationwide between April and May. Missouri's decrease of 1,100 cases and 18 cases per 100,000 residents, however, reflects only general time trends because Missouri did not implement its tort reform laws during this period. Taking the difference between these two changes yields the difference-in-difference estimate of the effect of South Carolina's law. If Missouri is an appropriate control state for what would have happened in South Carolina but for South Carolina's new law, then the difference-in-differences model identifies the effect of

155. *See supra* Table 1; *see also Latest Summary of COVID-19 Legislation & Executive Orders*, *supra* note 88.

156. See *supra* Part III Section A for the data sources used for these calculations.

157. *See, e.g.*, *Election 2020 House Results*, CNN, https://www.cnn.com/election/2020/results/house [https://perma.cc/ZKL9-CDVY].

158. *Latest Summary of COVID-19 Legislation & Executive Orders*, *supra* note 88.

159. *Id.*

South Carolina's tort reform on the spread of COVID-19.[160] In this example, the differences-in-differences estimate of the net effect of all three reforms is a decrease of 1,700 cases per month, or 35 cases per 100,000 South Carolina residents.

The analysis estimates the effect of each law using an analogous calculation for every state in the United States during each week from January 2020 to January 2022. The final estimate is the average estimate for each treated state when compared to both itself before it passed its reform and all other states. The model is estimated using a Poisson regression, which is generally the appropriate functional form for regressions performed on count data (such as the count of cases or fatalities).[161] The Poisson differences-in-differences equation, by including a binary variable for each week in the sample, will also account for systemic underreporting of COVID-19 cases that may change over time. The binary variables for each week also account for any nationwide policy changes that affect all states equally.[162] Each state-week observation is weighted by the population of the relevant state to ensure that the estimates reflect the effect of these laws on individuals rather than states as a whole. The result of the model is an estimate is the average effect across the United States of adopting COVID-19 tort reform.

There are at least two limitations to the empirical model that are worth acknowledging. First, a differences-in-differences model will only provide a valid causal estimate of the effect of a law if the public health metrics in the states that passed reform laws would have evolved similarly to public health metrics in the states that did not, or had not yet, enacted reform laws if the passing states never enacted a reform

160. *See, e.g.*, Ricardo Mora & Iliana Reggio, *Alternative Diff-in-Diffs Estimators with Several Pretreatment Periods*, 38 ECONOMETRIC REVS. 465, 477 (2017).

161. *See* A. Colin Cameron & Per Johansson, *Count Data Regression Using Series Expansions: With Applications*, 12 J. APPLIED ECONOMETRICS 203, 203 (1997) (describing Poisson as the "benchmark" model for count data).

162. For example, shortly into the pandemic Congress authorized the Secretary of Health and Human Services to make a declaration that would immunize covered persons from liability when engaged in covered countermeasures identified in the declaration. Targeted Liability Protections for Pandemic and Epidemic Products and Security Countermeasures, 42 U.S.C. § 247d–6d(a) (2020). The Secretary made such a declaration, granting immunity to anyone who manufacture[s], test[s], develop[s], distribut[es], or administ[ers]" "any antiviral, any other drug, any biologic, any diagnostic, or any vaccine, used to treat, diagnose, cure, prevent, or mitigate COVID-19." Declaration Under the Public Readiness and Emergency Preparedness Act for Medical Countermeasures Against COVID-19, 85 Fed. Reg. 15,198, 15,201-02 (Mar. 17, 2020). The binary variables for each week in the sample implicitly control for any influence that declaration may have had on the pandemic and remove any bias from it to the models.

law.[163] More simply, the "control group" must be a good comparator for the "treatment group." This requirement is known as the "parallel trends assumption" in a difference-in-differences model.[164] The designation as an "assumption" reflects that fact that it is untestable, and that a difference-in-differences model's evidentiary value varies with how good the control group is. If, for example, states adopting tort reform laws systematically differed from those that did not, such as if states with worse pandemic conditions were more likely to institute reforms, it could undermine the estimates. That concern seems unlikely, particularly for medical liability reforms, given that most states adopted the reforms within a narrow window of time, and the precise date of adoption is somewhat random. But it cannot be ruled out and may affect the estimates.

Another potential confounding factor is the inability to control for all other factors that may have affected public health metrics and are correlated with the passage of the laws analyzed. The analysis relies on weekly COVID-19 data to precisely compare public health metrics before and after the enactment date of a law. The drawback of relying on weekly data is that relatively few datasets provide data at such a fine level of granularity. The analysis explicitly controls for other state interventions and the number of individuals who are vaccinated but cannot control for other factors that evolved over time, like individuals' risk tolerance, or local business closures. To address this complication, the models include "lagged" variables. For example, in the regression models measuring the effect of tort reform on COVID-19 cases, I include variables measuring how many COVID-19 cases, tests, hospitalizations, and deaths were in the relevant state in the previous week. To the extent that factors are evolving over time in response to COVID-19 case counts or other public health metrics, the lagged variables will account for them. But they do so indirectly, and potentially incompletely, which makes it difficult to determine whether such factors are affecting the analysis. State-specific factors that are relatively time-invariant are controlled for using binary variables for each state, while factors that affect all states equally are accounted for using binary variables for each week in data.

In sum, the empirical model identifies the effect of each of the three laws of interest using a differences-in-differences model. That model estimates the effect of the laws by comparing changes in public health metrics within states that adopted reform laws and between states that have and have not passed adopted them. Though confounding factors may exist, the models provide a plausibly causal estimate of what effect COVID-19 tort reform has had.

163. *See, e.g.*, Mora & Reggio, *supra* note 160, at 478 (discussing the parallel trends assumption under various econometric approaches).

164. *Id.*

IV. THE EFFECT OF COVID-19 TORT REFORM

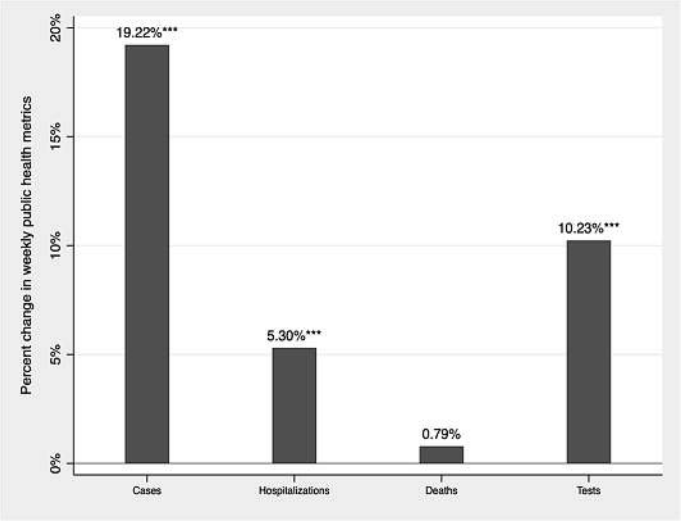
This Part presents the core contribution of this Article: the empirical analysis of COVID-19 tort reforms. Section A discusses medical liability reforms, Section B discusses exposure liability reforms, and Section C discusses products liability reforms.

A. Medical liability

The empirical results provide strong support for the medical liability hypotheses discussed in Part II. Figure 1 shows the effect of medical liability reforms on COVID-19 cases, hospitalizations, deaths, and tests. Each bar represents the percent change in weekly cases, hospitalizations, deaths, or tests which the difference-in-difference model indicates is attributable to medical liability reforms in the average state that instituted those reforms. The precise value of the estimate is indicated above each bar. Additionally, statistically significant estimates are marked with asterisks. An estimate is statistically significant at the 1%, 5%, or 10% level if the model indicates that if the relevant law actually had no effect, the probability that the model would yield an effect as large as observed is less than 1%, 5%, or 10%.[165] In other words, the level of statistical significance, or the lack of it, indicates the probability that the model's result is a false positive.

165. Jill E. Fisch & Jonah B. Gelbach, *Power and Statistical Significance in Securities Fraud Litigation*, 11 HARV. BUS. L. REV. 55, 61 (2021) ("In the social science literature from which the event study methodology is drawn, the results of hypothesis testing depend on the likelihood that an outcome as extreme as the one observed would occur by chance, given that no event having a causal effect on stock price had actually occurred.").

Figure 1: Medical liability reform



Note: Figure displays the difference-in-difference estimates of the effect of the medical malpractice reforms on the relevant metric in the average state. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level. Each column is from a different model with the relevant metric as the dependent variable. Full results for the differences-in-differences regression models are in the Technical Appendix.

States that immunized health care providers from negligence or malpractice liability for treatment of COVID-19, on average, experienced 19.2% higher weekly COVID-19 cases, approximately 5,100 cases per week. Hospitalizations for COVID-19 also increased by 5.3% following immunity, just under 200 hospitalizations per week. Finally, the number of administered tests for COVID-19 increased by 10.2% relative to pre-immunity averages – approximately 36,000 additional tests per week. The effects on cases, hospitalizations, and tests are all statistically significant at the 1% level. In contrast, the empirical model indicates that liability immunity for health care providers did not have a statistically significant effect on the number of COVID-19 fatalities.

The increased hospitalizations, cases, and tests demonstrate that hospitals were willing to admit more patients following liability immunity. The 5% increase in hospitalizations demonstrates that hospitals were willing to admit more patients for observation or other treatments once the liability risk of treating patients with less care was smaller. Whether admitting additional patients was socially beneficial depends on two factors – whether those patients exposed others to a greater risk of COVID-19, and whether their own risk of dying of COVID-19 was reduced.

The increased number of cases and tests in the empirical model suggests that the lower standard of care caused COVID-19 to spread

throughout hospitals. Increased tests in response to medical liability reforms is consistent with expectations: more firms were willing to offer tests or expand their existing facilities when the potential liability costs of doing so were diminished. And, almost necessarily, more COVID-19 tests will cause a state to detect more COVID-19 cases. But the fact that tests increased by 10% while new cases increased by 20% means that the population of individuals who were tested following the passage of the law were significantly more likely to have COVID-19 than the general population.[166] The positivity rate of those tests is likely higher because they were being tested after spending time in a hospital environment with higher-than-average COVID-19 exposure risk. To be sure, the increase in cases is certainly not fully attributable to spread within hospital. As discussed, immunity laws likely induced some number of providers to offer COVID-19 tests, causing a corresponding increase in both tests and cases. Yet the totality of the empirical evidence indicates that additional individuals contracted COVID-19 due to medical liability laws.

Finally, the lack of an effect on fatalities is ambiguous, but suggests that tort reform did not benefit patients. It could be the case that hospitalization had no benefit for the additional 5% of patients who were hospitalized. Assuming that hospitals prioritized patients most likely to benefit from care pre-reform, the additionally admitted patients would be less likely to benefit from hospitalization. However, equally consistent with the empirical results would be that those patients' mortality risk did decrease due to the care they received, but the additional spread of COVID-19 in the hospital caused fatalities that offset the lives saved.

In aggregate, the empirical results demonstrate that COVID-19 reform did not benefit patients and likely served to transfer a substantial amount of wealth to health care providers. An increase in hospitalizations and cases without a corresponding decrease in deaths means more patients contracted COVID-19 without an offsetting public health benefit.[167]

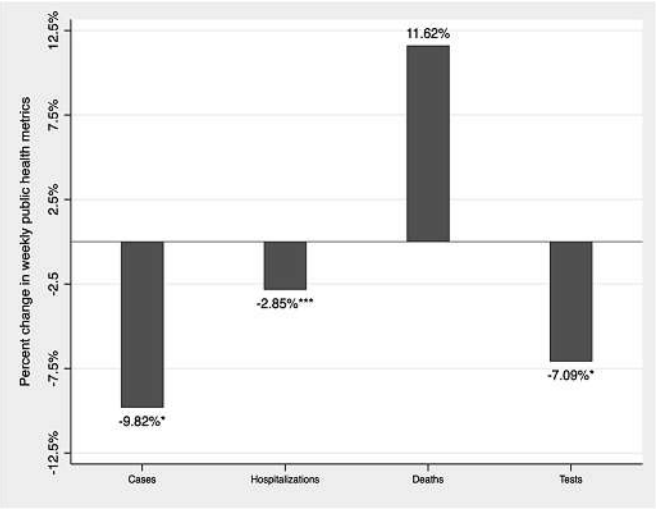
B. Exposure liability

The empirical results support the exposure hypotheses discussed in Part II. Figure 2 demonstrates the effect of exposure liability reforms on cases, hospitalizations, deaths, and tests.

166. Indeed, the positivity rate of weekly new tests in the data was 8.3% in states and weeks where no medical liability immunity exists, and 10.4% in states and weeks following reform. The difference between the two rates is statistically significant at the 1% level. *See supra* Part III Section A for the data sources for these calculations.

167. It is possible that the treatments for the marginal patients made their COVID-19 cases less severe without ultimately decreasing their probability of dying, but the empirical data examined do not permit testing that hypothesis.

Figure 2: Exposure liability reform



Note: Figure displays the difference-in-difference estimates of the effect of exposure liability reform on the relevant metric in the average state. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level. Each column is from a different model with the relevant metric as the dependent variable. Full results for the differences-in-differences regression models are in the Technical Appendix.

States that immunized individuals and business from negligence or premises liability immunity for exposing a plaintiff to COVID-19 experienced 9.8% fewer weekly cases – about 2,500 fewer cases per week. Consistently, there were 2.9% fewer weekly hospitalizations in such states, amounting to 100 fewer individuals admitted for COVID-19 each week. Finally, individuals in states immunizing individuals and businesses for exposure reform also had 7.1% fewer weekly tests for COVID-19. The effect of the laws on cases and tests is significant only at the 10% level,[168] while the effect on hospitalizations is statistically significant at the 1% level. While the estimated effects on cases and tests are statistically weaker, the fact that they are close to conventional levels of significance and are consistent with the effect on hospitalizations, which itself is significant, suggests the results reveal a meaningful effect rather than a spurious correlation. In any event, the results do not indicate that exposure reforms affected the level of COVID-19 fatalities.

168. *See infra* Table A4 for the p-value calculations regarding tests (finding the p-value for the effect on cases is 0.065, while the p-value for the effect on tests is 0.053).

The estimated effect of exposure reforms is contrary to the usual predictions of tort theory, but consistent with the hypotheses discussed in Part II. The 10% decrease in cases, 3% decrease in hospitalizations, and 7% decrease in COVID-19 tests all demonstrate that exposure reforms decreased the spread of COVID-19. A decrease is only possible if the laws immunizing actors from liability somehow incentivized individuals or institutional actors to take more care. As hypothesized in Part II, the observed result could occur if individuals did not take more risks as a result of the statute and if businesses and other landowners relied on the safe harbor provisions of COVID-19 tort reform to require customers and occupants to take greater care.

The empirical estimates demonstrate that businesses and landowners embraced the safe harbor provisions in exposure reform laws, resulting in more individuals complying with public health guidance on how to reduce the risk of COVID-19 transmission.[169] Before states passed those laws, it would seem, the costs of imposing compliance with public health guidance on customers were sufficiently large that many businesses were not willing to do so. However, when other businesses were enforcing compliance, and when doing so had the offsetting benefit of guaranteeing immunity from liability, businesses began requiring customers to wear masks, stay socially distanced, and otherwise follow recommended steps to decrease the risk of transmission. While these steps seem to have effectively decreased the spread of COVID-19, they did not decrease fatalities. The implication is that individuals who were more likely to suffer severe COVID-19 because of other conditions they had were already self-selecting out of visiting businesses that did not enforce public health guidance before the law induced those businesses to do so. As a result, the risk to the individuals who expected to have dangerous courses of illness remained unchanged.

For individuals, in turn, it follows that the laws likely had no effect at all. The results indicate that individuals choosing how cautious to be during the pandemic did not care about the tort ramifications of their level of care. Rather, they chose how cautious to be to protect themselves from infection and to conform to social norms. That result, likely consistent with how individuals conduct themselves in a variety of circumstances outside of the COVID-19 pandemic, has profound implications for the limitations of tort law. If individuals choose the level of risk to expose themselves and others to without regard to tort law, tort is likely to be an ineffective tool for incentivizing individuals

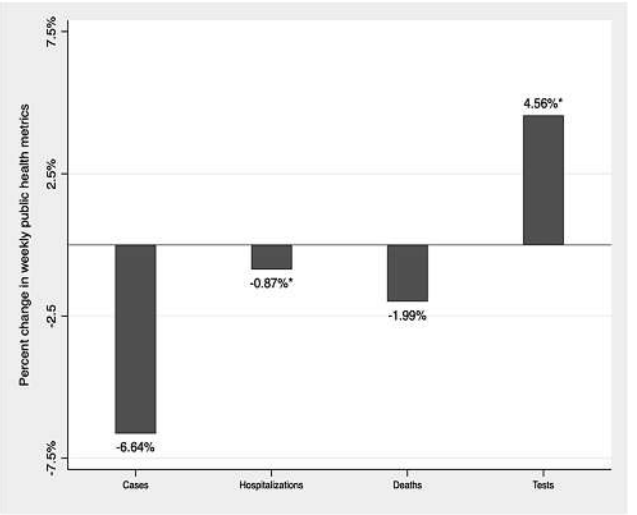
169. It is possible that the health care reform laws could have had beneficial effects if they had largely incorporated safe harbor aspects like the exposure reform laws. Other scholars have argued that COVID-19 tort reform liability would only be appropriate paired with such safe harbor provisions. *E.g.*, Valerie Gutmann Koch, *Crisis Standards of Care and State Liability Shields*, 57 SAN DIEGO L. REV. 973, 989–90 (2020).

to take efficient levels of risk. Most individuals, it would seem, were already taking a reasonable or greater than reasonable level of care for reasons unrelated to tort law. To the extent some individuals did adjust their level of care in response to immunity, the negative overall effect suggests that the effect of businesses embracing public health guidance for a safe harbor dwarfed any increased risk from those few individuals. Moreover, the fact that the safe-harbor provisions decreased cases provides further evidence that many individuals chose a level of care without regard to tort consequences. As discussed in Part I, compliance with public health guidance likely constitutes a reasonable level of care for an individual. Businesses requiring customers to meet that level of care caused a decrease in the spread of COVID-19, demonstrating that many individuals were choosing a negligent level of care despite the possibility of liability.

C. Products liability

The final set of results demonstrate that products liability reforms had little effect. As with the previous two figures, Figure 3 demonstrates the effect of products liability reform on cases, hospitalizations, deaths, and tests.

Figure 3: Products liability reform



Note: Figure displays the difference-in-difference estimates of the effect of products liability reform on the relevant metric in the average state. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level. Each column is from a different model with the relevant metric as the dependent variable. Full results for the differences-in-differences regression models are in the Technical Appendix.

Contrary to the hypotheses discussed above, there is little evidence that products liability reforms had a material effect on public health. The empirical results suggest that hospitalizations decreased by 0.9% following products liability tort reforms. They also indicate that tests increased by 4.6%. However, the model does not indicate that products liability reforms affected cases or deaths, as those effects are statistically insignificant. Moreover, as with the case and test effects of the exposure reform laws, the effect of products liability reform on hospitalizations and tests is statistically significant at only the ten percent level.

The evidence of an increase in tests indicates that products liability laws increased the propensity of firms to enter the market to manufacture COVID-19 tests or otherwise produce more. The greater availability of tests led more to be offered to the public, and so more individuals were tested. However, greater testing did not correspond to an increase in the number of cases. It is possible that the individuals who tested in response to greater testing availability were substantially less likely to have a positive result. Such a result would occur, for example, if the individuals demanding those additional tests were testing prophylactically or to confirm a prior negative result.

The hospitalization results, however, are more puzzling. The greater availability and lower price of COVID-19 tests and protective equipment may have modestly decreased the number of individuals who experienced severe cases of COVID-19. But it is not clear why products liability immunity would lead to fewer hospitalizations without a corresponding decrease in cases or deaths. Accordingly, the hospitalization result is most likely just statistical noise. In any event, the empirical model demonstrates that COVID products liability reform had a small effect, if any, on public health metrics.[170]

CONCLUSION

This Article empirically explored the effects of COVID-19 tort reform. Medical liability reforms had the most robust effects, increasing COVID-19 cases, hospitalizations, and tests.[171] The laws served to transfer welfare from the public to health care entities without corresponding public health benefits. Exposure reforms modestly decreased COVID-19 cases and hospitalizations without affecting

170. Another possibility is that the products liability reforms were duplicative of the federal declaration that granted immunity for manufacturers of products that could treat or diagnose COVID-19. *See supra* note 162. In that case, the model observes no effect for the state-level reforms because the federal reform accomplished the same effect but the model implicitly addressed it in other variables that can't be mapped particularly to the products liability effect.

171. *See supra* Part II.

COVID-19 fatalities.[172] The implication is that the safe harbor most of these laws established affected the behavior of some institutional actors, but that individuals were already taking substantial precautions without regard to tort law. That result shows that tort law provides a dull incentive in circumstances where self-protection is likely to cause individuals to take sufficient care to prevent injury to themselves and others. We might expect, for example, increasing negligence liability for motorists to have little effect, since motorists have a substantial incentive to protect themselves. The general lack of an effect for products liability immunity has similar implications.[173] Immunity from such suits increased COVID-19 testing, indicating that the laws did make scarce medical supplies more available. But greater supplies did not have a robust effect on public health outcomes. The most likely explanation is that individuals take other precautions when protective supplies are scarce. To the extent individuals were able to access equipment and engage in more activity safely, such statutes had an unambiguous positive effect. The major thrust of these results is that immunity from suit can have a variety of effects that are dependent on context. But in circumstances where people engage in self-protection—either by curtailing activity or taking more care while engage in activity—tort law is a significantly weaker incentive to drive individual behavior.

172. *Id.*

173. *Id.*

Technical Appendix

Table A1: Effect of COVID-19 Tort Reform on COVID-19 Cases

Variables	(1)	(2)	(3)	(4)
Medical liability reform	-0.058	0.286	0.160	0.176
	(0.126)	(0.045)***	(0.054)***	(0.034)***
Exposure claims reform	0.319	-0.162	-0.165	-0.103
	(0.159)**	(0.111)	(0.079)**	(0.056)*
Product liability reform	-0.321	-0.357	-0.018	-0.069
	(0.075)***	(0.054)***	(0.044)	(0.049)
Public mask mandate	-	0.298	0.018	0.034
		(0.131)**	(0.037)	(0.036)
Stay at home order	-	0.762	0.037	-0.038
		(0.118)***	(0.061)	(0.053)
ln (Fully vaccinated)	-	-0.088	0.076	0.140
		(0.182)	(0.077)	(0.084)*
Lagged cases			X	X
Lagged tests				X
Lagged hospitalizations				X
Lagged deaths				X

Note: Sample includes 5,304 state-week level observations. Dependent variable is the count of new COVID-19 cases in the relevant week. Models with lagged variables include the natural logarithm of the previous six weeks of the relevant variables. Coefficients are presented as the marginal effect on the logarithm of the dependent variable and are transformed to percent changes in the relevant figure in the main text. *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Effect of COVID-19 Tort Reform on COVID-19 Hospitalizations

Variables	(1)	(2)	(3)	(4)
Medical liability reform	0.252	0.413	0.047	0.052
	(0.105)**	(0.046)***	(0.006)***	(0.007)***
Exposure claims reform	0.038	-0.175	-0.018	-0.029
	(0.124)	(0.091)*	(0.008)**	(0.009)***
Product liability reform	-0.165	-0.192	-0.025	-0.009
	(0.050)***	(0.041)***	(0.005)***	(0.005)*
Public mask mandate		0.114	-0.022	-0.026
		(0.070)	(0.006)***	(0.008)***
Stay at home order		0.501	0.031	0.007
		(0.092)***	(0.011)***	(0.011)
ln (Fully vaccinated)		-0.300	-0.027	-0.032
		(0.143)**	(0.015)*	(0.015)**
Lagged cases				X
Lagged tests				X
Lagged hospitalizations			X	X
Lagged deaths				X

Note: Sample includes 5,304 state-week level observations. Dependent variable is the count of new COVID-19 hospitalizations in the relevant week. Models with lagged variables include the natural logarithm of the previous six weeks of the relevant variables. Coefficients are presented as the marginal effect on the logarithm of the dependent variable and are transformed to percent changes in the relevant figure in the main text. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Effect of COVID-19 Tort Reform on COVID-19 Deaths

Variables	(1)	(2)	(3)	(4)
Medical liability reform	0.252	0.413	0.047	0.052
	(0.105)**	(0.046)***	(0.006)***	(0.007)***
Exposure claims reform	0.038	-0.175	-0.018	-0.029
	(0.124)	(0.091)*	(0.008)**	(0.009)***
Product liability reform	-0.165	-0.192	-0.025	-0.009
	(0.050)***	(0.041)***	(0.005)***	(0.005)*
Public mask mandate		0.114	-0.022	-0.026
		(0.070)	(0.006)***	(0.008)***
Stay at home order		0.501	0.031	0.007
		(0.092)***	(0.011)***	(0.011)
ln (Fully vaccinated)		-0.300	-0.027	-0.032
		(0.143)**	(0.015)*	(0.015)**
Lagged cases				X
Lagged tests				X
Lagged hospitalizations				X
Lagged deaths			X	X

Note: Sample includes 5,304 state-week level observations. Dependent variable is the count of new COVID-19 deaths in the relevant week. Models with lagged variables include the natural logarithm of the previous six weeks of the relevant variables. Coefficients are presented as the marginal effect on the logarithm of the dependent variable and are transformed to percent changes in the relevant figures in the main text. *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Effect of COVID-19 Tort Reform on COVID-19 Tests

Variables	(1)	(2)	(3)	(4)
Medical liability reform	0.117	0.280	0.141	0.097
	(0.070)*	(0.084)***	(0.021)***	(0.024)***
Exposure claims reform	-0.425	-0.401	-0.152	-0.074
	(0.160)***	(0.191)**	(0.049)***	(0.038)*
Product liability reform	0.118	0.123	0.044	0.045
	(0.077)	(0.109)	(0.021)**	(0.026)*
Public mask mandate		0.397	0.143	0.191
		(0.086)***	(0.029)***	(0.026)***
Stay at home order		-0.042	-0.030	-0.047
		(0.095)	(0.044)	(0.050)
ln (Fully vaccinated)		0.384	0.138	0.148
		(0.155)**	(0.061)**	(0.068)**
Lagged cases				X
Lagged tests			X	X
Lagged hospitalizations				X
Lagged deaths				X

Note: Sample includes 5,304 state-week level observations. Dependent variable is the count of new COVID-19 tests in the relevant week. Models with lagged variables include the natural logarithm of the previous six weeks of the relevant variables. Coefficients are presented as the marginal effect on the logarithm of the dependent variable and are transformed to percent changes in the relevant figure in the main text. *** p<0.01, ** p<0.05, * p<0.1.