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John Aloysius Cogan Jr.

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The Uneasy Case for Food Safety Liability Insurance

John Aloysius Cogan Jr.[†]

INTRODUCTION

Food safety liability insurance is emerging as one of the latest trends in market-based food safety regulation. But why? The answer is simple: food is our most dangerous consumer product,¹ and our federal and local governments do not fully protect us from its perils.

According to the Centers for Disease Control and Prevention (CDC), one in six—about 48 million—Americans suffer from foodborne illnesses, such as *Salmonella*, *Norovirus*, *Listeria*, and *Escherichia coli* (*E. Coli*), each year. Annually, 128,000 Americans require hospitalization and 3,000 die from foodborne illnesses.² Many of the survivors of these enteric foodborne illnesses³ are left suffering from chronic and debilitating conditions such as kidney failure, paralysis, and rheumatoid arthritis.⁴ And beyond the profound physical tolls of

[†] Associate Professor of Law, University of Connecticut School of Law.

¹ See JEAN C. BUZBY ET AL., U.S. DEPT OF AGRIC., AGRICULTURAL ECON. REPORT NO. 799, PRODUCT LIABILITY AND MICROBIAL FOODBORNE ILLNESS 1 (2001), <http://www.ers.usda.gov/media/533488/aer799.pdf> [<http://perma.cc/LT67-5ZZN>] (noting that “contaminated food products cause more deaths each year than the combined totals of all 15,000 products regulated by the U.S. Consumer Product Safety Commission”).

² *Estimates of Foodborne Illness in the United States*, CTRS. FOR DISEASE CONTROL & PREVENTION (Jan. 8, 2014) [hereinafter *Estimates of Foodborne Illness*], <http://www.cdc.gov/foodborneburden> [<https://perma.cc/986Y-VPZC>].

³ “Enteric infections,” such as *E. coli*, *Salmonella*, *Norovirus*, and *Listeria*, “enter the body through the mouth and intestinal tract and are usually spread through contaminated food and water or by contact with vomit or feces.” *Enteric Diseases Epidemiology Branch*, CTRS. FOR DISEASE CONTROL & PREVENTION (Apr. 23, 2013), <http://www.cdc.gov/ncezid/dfwed/edeb/> [<http://perma.cc/7FK6-KK9X>].

⁴ A bout of foodborne illness can have serious health aftereffects, or sequelae. Sequelae can include reactive arthritis, urinary tract problems, eye damage, Guillain-Barré syndrome, ulcerative colitis, diabetes, kidney failure, and paralysis. For example, certain forms of *E. coli*, such as *E. coli* O157:H7, can lead to kidney failure, coma, and permanent paralysis. See *E. coli* O157:H7 and Other Shiga Toxin-Producing *E. coli*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 5, 2013), <http://www.cdc.gov/pulsenet/pathogens/ecoli.html> [<http://perma.cc/8TW5-KVBG>]. For a description of how *E. coli* O157:H7 severely affected one victim, see Michael Moss, *The Burger That Shattered Her Life*, N.Y. TIMES (Oct. 3, 2009), http://www.nytimes.com/2009/10/04/health/04meat.html?pagewanted=all&_r=0 [<http://perma.cc/8GVG-4ZEU>] (detailing how consumption

foodborne illness are its staggering economic consequences. Medical expenses, productivity losses, and the economic cost of premature deaths, pain, and suffering in the United States due to foodborne illness have been estimated at \$77.7 billion annually⁵—a figure equal to seven percent of our total annual spending on food.⁶ Yet despite the illnesses and deaths, major outbreaks and media attention,⁷ staggering costs, and new federal legislation aimed at improving food safety,⁸ the situation has not significantly improved. While the number of illnesses attributable to foodborne pathogens has declined somewhat since 1996,⁹ CDC researchers have concluded that the overall incidence of foodborne illness “has not changed significantly” over the last

of hamburger containing *E. coli* O157:H7 resulted in paralysis of a 22-year-old woman). Sequelae are not, however, limited to individuals who suffered serious cases of food poisoning, but have been linked to victims who experienced minor cases of foodborne illnesses. See Maryn McKenna, *Food Poisoning's Hidden Legacy*, SCI. AM. (Apr. 1, 2012), <http://www.scientificamerican.com/article/food-poisonings-hidden-legacy/?page=1> [<http://perma.cc/3N39-8CWZ>]; see also William F. Clark et al., *Long Term Risk for Hypertension, Renal Impairment, and Cardiovascular Disease After Gastroenteritis from Drinking Water Contaminated with Escherichia Coli O157:H7: A Prospective Cohort Study*, THEBMJ (Nov. 17, 2010), <http://www.bmj.com/content/341/bm> [<http://perma.cc/68LE-UKC6>] (finding that residents who suffered acute gastroenteritis during a townwide outbreak due to *Escherichia coli* O157:H7 and *Campylobacter* in the water supply had a greater risk developing of kidney problems, suffering heart attack or stroke, and developing high blood pressure in the eight years following the outbreak).

⁵ Robert L. Scharff, *Economic Burden from Health Losses Due to Foodborne Illness in the United States*, 75 J. FOOD PROTECTION 123, 124, 128 (2012) (using an enhanced cost-of-illness model that more completely captures the economic costs of foodborne illness).

⁶ Total annual spending on food in the United States in 2011 was \$1.3 trillion. *Table 1—Food and Alcoholic Beverages: Total Expenditures*, U.S. DEP'T OF AGRIC., ECON. RESEARCH SERV., <http://www.ers.usda.gov/data-products/food-expenditures.aspx#VEPgGda pqMI> [<http://perma.cc/XPR4-HX9D>] (last updated July 14, 2016).

⁷ Outbreaks of foodborne illness are regularly reported in the news media. See, e.g., Debra Goldschmidt, *Cilantro Eyed as Possible Source of Gastrointestinal Illness Outbreak*, CNN (Aug. 4, 2015, 7:10 PM), <http://www.cnn.com/2015/08/03/health/cilantro-cyclosporiasis-outbreak/> [<http://perma.cc/L5ZA-YJUD>]; Rachel Abrams, *Frozen Chicken Recalled After Reports of Illnesses*, N.Y. TIMES (July 16, 2015), <http://www.nytimes.com/2015/07/17/business/frozen-chicken-recalled-after-reports-of-illnesses.html?ref=topics> [<http://perma.cc/8XV5-PZTP>]; Sarah Parvini, *Three Deaths Linked to Tainted Ice Cream in Kansas, Prompting Recall*, L.A. TIMES (Mar. 14, 2015, 4:05 PM), <http://www.latimes.com/nation/nationnow/la-na-ice-cream-deaths-20150314-story.html> [<http://perma.cc/7N8K-U3DZ>].

⁸ FDA Food Safety Modernization Act, Pub. L. No. 111-353, 124 Stat. 3885 (2011) (codified in scattered sections of 21 U.S.C.) [hereinafter FSMA]. The FSMA shifts the burden onto food suppliers to ensure that their products are safe and relies less on FDA inspectors. The law requires better recordkeeping and contingency plans for handling outbreaks and preventing the spread of contaminants, and it gives the FDA new mandatory recall authority, a power it never had before. For a summary of the FSMA, see Ashley B. Burkett, Note, *Food Safety in the United States: Is the Food Safety Modernization Act Enough to Lead Us Out of the Jungle?*, 63 ALA. L. REV. 919, 930-39 (2012).

⁹ Stacy M. Crim et al., *Incidence and Trends of Infection with Pathogens Transmitted Commonly Through Food—Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2006–2013*, 63 MORBIDITY & MORTALITY WKLY. REP. 328, 331 (2014).

decade.¹⁰ But there is even more to worry about. Emerging evidence suggests that microbial pathogens in our food supply also cause infections outside of the digestive system.

There is strong evidence that raw retail chicken—the kind sold in supermarkets—contributes to the transmission of extraintestinal *E. coli* that causes urinary tract infections (UTIs). Every year, six to eight million UTIs occur in the United States, with more than 80% associated with *E. coli*.¹¹ Complicating the UTI problem is the growing prevalence of drug-resistant strains of *E. coli*, which increase the severity and cost of treating UTIs.¹² Once thought to be a sporadic condition, community-wide epidemics of UTIs are emerging, and retail chicken appears to be the culprit. Genetic evidence connects *E. coli* from retail chicken to *E. coli* causing human UTIs, suggesting that foodborne *E. coli* can lead to urinary tract and other extraintestinal infections.¹³

The United States is not alone in its struggles with food safety. According to the World Health Organization, foodborne pathogens are a global problem, sickening an estimated 582 million people annually and killing 351,000.¹⁴ China, for example, has a particularly acute food safety problem,¹⁵ and western European nations suffer high rates of foodborne illness.¹⁶

¹⁰ *Id.* at 328.

¹¹ Caroline Vincent et al., *Food Reservoir for Escherichia Coli Causing Urinary Tract Infections*, 16 EMERGING INFECTIOUS DISEASES 88, 88 (2010). These infections are responsible for an estimated \$1–2 billion in annual health care costs in the United States and are the most common source for *E. coli*-related bloodstream infections, which lead to sepsis and kill 40,000 people each year. *Id.*

¹² *Id.*

¹³ *Id.* at 91-93.

¹⁴ See News Release, World Health Org., World Health Day 2015: From Farm to Plate, Make Food Safe (Apr. 2, 2015), <http://www.who.int/mediacentre/news/releases/2015/food-safety/en/> [<http://perma.cc/AH42-DTMZ>] (2010 figures).

¹⁵ China's food supply is not only subject to microbial contamination, but also to safety problems related to pollution, chemical contamination, and adulteration. Chenhao Jia & David Jukes, *The National Food Safety Control System of China—A Systematic Review*, 32 FOOD CONTROL 236, 237 (2013). There is no reliable national-level data on foodborne illness in China, where underreporting of food safety problems is common. See Hon-Ming Lam et al., *Food Supply and Food Safety Issues in China*, 381 LANCET 2044, 2048 (2013) (noting that “fewer than 20,000 major food poisoning incidents a year [are] officially reported . . . and the number of incidents is surely much higher”). Anecdotal evidence, however, paints a grim picture. China's food safety problems are routinely described as “frightening,” “appalling,” and “bizarre.” See, e.g., Bruce Einhorn, *More Scares Ahead After China's Rat Meat Scandal*, BLOOMBERG BUS. (May 6, 2013), <http://www.businessweek.com/articles/2013-05-06/more-scares-ahead-after-chinas-rat-meat-scandal> [<http://perma.cc/8X34-CSXY>] (describing a rat meat scandal as “the latest frightening food-safety scare from China”); Nancy Huehnergath & Bettina Siegel, *Chicken from China? Your Seafood Is Already Being Processed There*, FOOD SAFETY NEWS (Mar. 4, 2014), <http://www.foodsafetynews.com/2014/03/chicken-from-china-your-seafood-is-already-being-processed-there/#.U9qXC0iRLY0> [<http://perma.cc/Q2YV-MDQV>] (describing China's food safety record as “appalling”); Mark Bitman, *China's Bizarre Food 'Safety' Scene, and Our Own*, N.Y. TIMES (July 6, 2011, 3:25 PM), <http://bittman.blogs.nytimes.com/2011/07/06/chinas-bizarre-food-safety-scene-and-our-own/?modul>

The United States, China, and many other countries have extensive regulatory regimes designed to ensure the safety of their food. Yet severe problems persist, raising the question: What more can be done to improve food safety? As the possible answers to this question are pondered, a corollary inquiry is often made: Can private market actors improve the safety of our food? Many believe that private market mechanisms can indeed make our food safer. One such mechanism, food safety liability insurance, appears to be gaining popularity as a means to improve food safety. Scholars have suggested that compulsory food safety liability insurance, a specialized insurance product through which insurers manage food safety risk, could supplement or even supplant government regulation of food safety.¹⁷ Governments are exploring the benefits of food safety insurance. In China, the government is promoting the development of a new market for food safety liability insurance coverage¹⁸ with the hope that private insurance companies will augment government food safety systems by increasing supervision over the food industry.¹⁹ In the United States, food safety concerns are also prompting an increasing number of retail food buyers and institutional food providers (such as schools and hospitals) to require their small-farm food

e=Search&mabReward=relbias%3Ar%2C{%221%22%3A%22RI%3A10%22 [http://perma.cc/7HJZ-8YFP] (calling China's food safety incidents "bizarre").

¹⁶ See generally European Food Safety Auth. & European Ctr. for Disease Prevention and Control, *The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-Borne Outbreaks in 2012*, 12 EFSA J., 2014, at 1, 5, <http://ecdc.europa.eu/en/publications/Publications/EU-summary-report-zoonoses-food-borne-outbreaks-2012.pdf> [<http://perma.cc/5TAK-C73Y>] (detailing rates of foodborne illness in the European Union); see also Jennifer McEntire, *Foodborne Illness: How Do the U.S. and EU Compare?*, ACHESON GROUP BLOG (Mar. 6, 2014), <http://achesongroup.com/2014/03/foodborne-illness-us-eu-compare/> [<http://perma.cc/TJ8R-YZNE>] (comparing rates of foodborne illness in the United States and the European Union).

¹⁷ See Omri Ben-Shahar & Kyle D. Logue, *Outsourcing Regulation: How Insurance Reduces Moral Hazard*, 111 MICH. L. REV. 197, 243-45 (2012) (arguing that compulsory food safety liability insurance would place liability insurers in the role of business licensers and regulators of food safety).

¹⁸ FOREIGN AGRIC. SERV., U.S. DEPT OF AGRIC., CHINA'S FOOD SAFETY LAW 14 (2015), http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Amended%20Food%20Safety%20Law%20of%20China_Beijing_China%20-%20Peoples%20Republic%20of_5-18-2015.pdf [<http://perma.cc/JHM4-VFAM>]. China had originally considered imposing a compulsory food liability insurance scheme. See David Green, *China Briefing: Beijing Puts Wheels in Motion on New Safety Laws*, JUST-FOOD (Nov. 29, 2013), http://www.just-food.com/management-briefing/beijing-puts-wheels-in-motion-on-new-safety-laws_id125257.aspx [<http://perma.cc/EJ4C-5L7U>]; Xu Wei, *Liability Insurance Proposed for Food Industries*, CHINA DAILY (July 3, 2014, 7:02 AM), http://www.chinadaily.com.cn/china/2014-07/03/content_17638955.htm [<http://perma.cc/VTR4-FZNF>].

¹⁹ Wei, *supra* note 18 (quoting Xu Jinghe, director of legal affairs for China's Food and Drug Administration).

suppliers to carry food safety liability insurance,²⁰ some in response to an exemption of small farms from the reach of the Food Safety Modernization Act (FSMA).²¹ Even Congress has considered the merits of insurance as a possible regulator of food safety. The 2014 Farm Bill required the U.S. Department of Agriculture (USDA) to undertake a feasibility study of food safety insurance for certain crops.²²

It should come as no surprise that food safety liability insurance is at the forefront of market-based food safety initiatives. Perhaps the most significant development in insurance theory over the last several decades is the idea that insurance can be an effective private regulator of risk. Carol Heimer,²³ Kenneth Abraham,²⁴ Tom Baker and Peter Siegleman,²⁵ and Omri Ben-Shahar and Kyle Logue,²⁶ among others,²⁷ have all described

²⁰ See, e.g., Kathryn A. Boys et al., *The Food Safety Modernization Act: Implications for U.S. Small Scale Farms*, 41 AM. J.L. & MED. 395, 401 (2015) [hereinafter Boys et al., *The Food Safety Modernization Act*] (noting that an increasing number of food buyers now require that their suppliers carry food product liability insurance); Kathryn A. Boys, *Food Product Liability Insurance: Implications for the Marketing of Specialty Crops*, CHOICES MAG., 4th Q. 2013, <http://www.choicesmagazine.org/choices-magazine/theme-articles/attitudes-towards-risk-in-a-changing-agricultural-marketing-environment/food-product-liability-insurance-implications-for-the-marketing-of-specialty-crops> [<http://perma.cc/24S8-JZPX>] (noting that buyers of specialty crops require farmers to purchase food liability insurance); KRISTEN MARKLEY, CMTY. FOOD SEC. COAL., FOOD SAFETY AND LIABILITY INSURANCE (2010), https://www.mffh.org/mm/files/Food_Safety_and_Liability_Ins-EmergingIssues.pdf [<http://perma.cc/GMZ2-XQFJ>].

²¹ See Boys et al., *The Food Safety Modernization Act*, *supra* note 20, at 397, 400 (noting an “increasingly prevalent requirement that small farms obtain [food safety liability] coverage”). For an overview of the FSMA and its requirements, see *supra* note 8.

²² See Agricultural Adjustment Act of 2014, Pub. L. No. 113-79, § 11022, 128 Stat. 649 (2014) (requiring the USDA “to conduct a study to determine whether offering policies that provide coverage for specialty crops from food safety and contamination issues would benefit agricultural producers”).

²³ Carol A. Heimer, *Insuring More, Ensuring Less: The Costs and Benefits of Private Regulation Through Insurance*, in EMBRACING RISK: THE CHANGING CULTURE OF INSURANCE AND RESPONSIBILITY 116, 125-28 (Tom Baker & Jonathon Simon eds., 2002) (describing how the need for insurance regulates access to certain activities, such as home buying and renting cars); CAROL A. HEIMER, REACTIVE RISK AND RATIONAL ACTION: MANAGING MORAL HAZARD IN INSURANCE CONTRACTS 42-48 (1985) (describing the techniques through which insurance requirements encourage safety improvements, including underwriting and risk-based premiums).

²⁴ Kenneth S. Abraham, *Four Conceptions of Insurance*, 161 U. PA. L. REV. 653, 684 (2013) (observing that “insurance functions like government by influencing policyholders’ conduct and protecting them against misfortune”) [hereinafter Abraham, *Four Conceptions*]; KENNETH S. ABRAHAM, DISTRIBUTING RISK 57 (1986) (using the term “surrogate regulation” to describe the role of insurers providing liability coverage for toxic torts and environmental risks).

²⁵ Tom Baker & Peter Siegelman, *The Law and Economics of Liability Insurance: A Theoretical and Empirical Review*, in RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS 177-180 (Jennifer Arlen ed., 2013) (describing risk-control devices in liability insurance).

²⁶ Ben-Shahar & Logue, *supra* note 17, at 201.

²⁷ See, e.g., RICHARD V. ERICSON ET AL., INSURANCE AS GOVERNANCE 48 (2003) (describing insurance as a mechanism capable of, among other things, managing risk); Jeffrey Kehne, Note, *Encouraging Safety Through Insurance-Based Incentives: Financial Responsibility for Hazardous Waste*, 96 YALE L.J. 403, 405-06 (1986) (describing the use of

the capacity of insurers to regulate the risky behavior of their insureds. Ben-Shahar and Logue have even made a strong case that insurers are often more effective at regulating risk and improving public safety than government agencies.²⁸ The basic theory of insurance as a private safety regulator is relatively simple and quite compelling. Insurers act to minimize their losses through a variety of risk-reduction techniques, including contract provisions designed to give insureds a financial incentive to lower their own risk.²⁹ The cumulative effect of such risk reduction is an overall reduction in societal risk. In this way, insurance promotes social welfare.³⁰ This idea—promoting social welfare by reducing individual risk—animates the drive to use liability insurance to improve food safety. If insurers can use the terms of a liability insurance contract to induce food suppliers to lower their risk of transmitting foodborne pathogens, society will benefit from an overall reduction in foodborne illnesses. The critical question is: Will it work?

This article questions the notion that liability insurance can serve as an effective regulator of food safety.³¹ While others have questioned the effects of liability insurance on food safety, they expressed their reservations in narrow terms. Buzby, Frenzen, and Rasco, for example, suggest that liability insurance distorts incentives to produce safe food by transforming the expected risk of liability arising from foodborne illness into a routine business expense.³² Relying on the traditional moral hazard argument against liability insurance,³³ they posit that liability insurance leads to underinvestment in food safety by insulating firms that grow, make, or distribute food products from the full financial impact of the foodborne illnesses they

insurance-based incentives to control accident costs); George M. Cohen, *Legal Malpractice Insurance and Loss Prevention: A Comparative Analysis of Economic Institutions*, 4 CONN. INS. L.J. 305, 325 (1997) (describing risk-reduction tools used in legal malpractice insurance); GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* 60-62 (1970) (describing insurance risk differentiation).

²⁸ See Ben-Shahar & Logue, *supra* note 17, at 201 (arguing that private safety regulation by insurance companies often outperforms government safety regulation).

²⁹ See *infra* Section II.C.

³⁰ *Id.* at 202.

³¹ Other insurance products, such as food recall insurance, do show some promise for improving food safety. See Jerry R. Skees et al., *The Potential for Recall Insurance to Improve Food Safety*, 4 INT'L FOOD & AGRIBUSINESS MGMT. REV. 99 (2001); see also *infra* Part V.

³² BUZBY ET AL., *supra* note 1, at 9.

³³ See Ben-Shahar & Logue, *supra* note 17, at 199 (“In much of the economic literature, insurance is seen as antithetical to risk reduction. Indeed, one of the cornerstones of the economics of information, regarded by many as axiomatic, is the moral hazard problem—the idea that a party who is insured against risk has a suboptimal incentive to reduce it.”).

cause, even if the firm's premium goes up due to a claim.³⁴ Lytton and McAllister also express doubt about the ability of liability insurance to effectively regulate food safety.³⁵ Lytton and McAllister point to variations in food safety hazards posed by different food products and the difficulty in tracing foodborne illness as significant impediments to insurers' accurate assessment of food safety risks.³⁶ They also suggest that inaccurate pricing, combined with aggressive marketing by insurers, leads to the type of moral hazard concerns that Buzby, Frenzen, and Rasco raise, namely that food suppliers will simply treat foodborne illness as "a cost of [doing] business" that is covered by insurance.³⁷

This article takes a more comprehensive approach than previous scholarship by systematically addressing the shortcomings of liability insurance as a regulator of food safety from three distinct perspectives: (1) an economics of information framework, (2) an analysis of the empirical evidence of underdeterrence of foodborne illness by the tort system, and (3) a review of emerging evidence of food suppliers' cognitive biases with regard to food safety. Combined, these three methodologically distinct approaches strongly suggest that food safety liability insurance is a weak regulator of food safety.

The principal impediment to food safety liability insurance as a regulator of food safety is an information problem in the marketplace for safe food. Consumers are burdened by significant informational asymmetries with respect to the food they eat. Possessing less information than the farmers, processors, transporters, retailers and others who grow, handle, prepare, and sell food, consumers cannot fully discern risky food from safe food. Was the food dropped on the floor? Was it exposed to contaminants or pathogens? Consumers almost never know. Furthermore, the nature of foodborne illness creates its own information problems. The period of time between infection by

³⁴ See BUZBY ET AL., *supra* note 1, at 9, 10-11, 26; see also Jean C. Buzby & Paul D. Frenzen, *Food Safety and Product Liability*, 24 FOOD POLY 637, 649 (1999).

³⁵ See Timothy D. Lytton & Lesley K. McAllister, *Oversight in Private Food Safety Auditing: Addressing Auditor Conflict of Interest*, 2014 WIS. L. REV. 289 (2014).

³⁶ *Id.* at 312 ("Pricing such risks is a challenge for even the most sophisticated and experienced underwriters.").

³⁷ *Id.* at 312-13. Lytton and McAllister also suggest that the dynamics of the litigation process and presence of multiple layers of insurance coverage blunt insurance's ability to allocate responsibility for a foodborne illness, thereby diminishing the regulatory capacity of liability insurance. *Id.* at 313; see also Tetty Havinga, *The Influence of Liability Law on Food Safety* 21 (Nijmegen Sociology of Law Working Papers Series 2010/02, 2010), <http://repository.uibn.ru.nl/bitstream/handle/2066/91432/91432.pdf> [<http://perma.cc/NX5U-29PA>] (reviewing the literature and concluding that "[i]nsurance companies [in the European Union] do not seem to encourage prevention of food safety risks").

a pathogen and the onset of symptoms is variable. Some foodborne illnesses take a few hours to develop, while others can take a week or more.³⁸ This not only makes it harder for victims of foodborne illness to link their sickness to a particular food, but the passage of time increases the likelihood that evidence of the contaminated food (i.e., the leftovers) will be unavailable for testing—thereby severing the empirical connection between the illness and its food source.

The consequences of these information problems are significant. The marketplace for food safety is beset by moral hazard and adverse selection problems that incentivize food suppliers to shirk on food safety. And because individuals suffering from foodborne illness are often unable to connect their sickness to a specific food or food supplier, there are considerable causation hurdles to tort liability. The result is underdeterrence by the tort system, reflected in an astonishingly low rate of litigation arising from foodborne illnesses. Since liability insurance relies on tort damages (and settlements) to spread risk and force insureds to internalize the costs of the risks they take, the underdeterrence problem significantly impedes the effectiveness of food safety liability insurance as a regulator of food safety. Finally, there is emerging evidence that cognitive biases contribute to the food safety problem by causing food suppliers to both overestimate their ability to control and underestimate their risk of spreading foodborne illnesses. Thus, while liability insurance is capable in many instances of improving public safety and can even outperform weak or flawed government regulatory schemes in some instances,³⁹ food safety problems provide a vivid counterexample to the regulatory power of liability insurance.

This article, however, should not be read as necessarily advocating for the complete elimination of food safety liability insurance. Instead, it is intended to stimulate a more robust discussion of the merits and costs of food safety liability insurance and how (and whether) food safety liability insurance should figure into the larger debate about how best to address the problem of food safety.

The article proceeds in five parts. After first describing how foodborne diseases are transmitted, Part I turns to federal and local government agencies and explains why they are

³⁸ See *infra* notes 206-08 and accompanying text.

³⁹ See generally Ben-Shahar & Logue, *supra* note 17 (arguing that private insurers often outperform government agencies as safety regulators because insurers possess superior information and are driven by competitive pressures).

unable to stop the spread of foodborne illnesses. These agencies, which still rely heavily on inspection of facilities and food as a means of ensuring food safety, are beset by three main problems: they are fragmented, insufficiently funded, and lack adequate enforcement powers. As a result of these deficiencies, and in light of the significant risks posed by tainted food, many food suppliers (and governments) have turned to private market risk-reduction services, like liability insurance, as a means to improve food safety.

Part II explains how liability insurance functions as a regulator of risk, the techniques insurers use to lower risk, and the conditions that must be met before liability insurance can successfully reduce risk. One of those conditions is sufficient tort liability. Liability insurance can only deter harm if premiums are sufficient to cause insureds to internalize the costs of the risks they take. If premiums are low because tort liability is rare, then liability insurance cannot regulate risk. As it turns out, low tort liability is the Achilles heel of food safety liability insurance due to the information difficulties in the market for safe food.

Part III examines the information problems that plague the market for safe food. Using an economics of information framework, the analysis describes the asymmetry of information that exists between consumers and food suppliers, the significant lag time between the ingestion of a foodborne pathogen and the onset of a foodborne illness, the moral hazard problem that motivates food suppliers to shirk on food safety, and the adverse selection problem that promotes a food safety “race to the bottom.” Part III concludes with an explanation of how cognitive biases cause food suppliers to underestimate their own risk of causing a foodborne illness.

Part IV describes the severe underdeterrence problem for foodborne illness tort claims and explains how this problem limits the effectiveness of food safety liability insurance as a risk regulator. Part V then briefly addresses some additional risks associated with food safety liability insurance, including the potential to increase moral hazard, send false signals regarding the risk of foodborne illness, and diminish demand for more effective means to control foodborne illnesses.

I. PUBLIC AND PRIVATE REGULATION OF FOOD SAFETY

A. *The Dangers of Foodborne Illness*

Although our food supply is often touted as “one of the safest in the world,”⁴⁰ millions of Americans are sickened each year and thousands die as a direct result of eating unsafe food.⁴¹ Undoubtedly, our highly complex food chain contributes to the problem. Foodborne pathogens can infect food at any point in the production and distribution process. Contamination can occur at a farm,⁴² during transport,⁴³ at a processing plant,⁴⁴ in a restaurant,⁴⁵ in a supermarket,⁴⁶ or even in our own homes.⁴⁷

⁴⁰ See Press Release, Ctrs. for Disease Control & Prevention, Infections from Some Foodborne Germs Increased, While Others Remained Unchanged in 2012 (Apr. 18, 2013), <http://www.cdc.gov/media/releases/2013/p0418-foodborne-germs.html> [<http://perma.cc/EYM4-ZBNM>] (quoting CDC Director Tom Frieden).

⁴¹ *Estimates of Foodborne Illness*, *supra* note 2.

⁴² See, e.g., CAL. FOOD EMERGENCY RESPONSE TEAM, INVESTIGATION OF AN *ESCHERICHIA COLI* O157:H7 OUTBREAK ASSOCIATED WITH DOLE PRE-PACKAGED SPINACH 3-4 (2007), <https://www.cdph.ca.gov/pubsforms/Documents/fdb%20eru%20Spnch%20EC%20Dole032007wph.PDF> [<http://perma.cc/NH8J-2GQR>] (finding presence of wild pigs in and around spinach fields and in the proximity of irrigation wells as a potential cause of a 2006 multistate outbreak of *E. coli* O157:H7 that resulted in 205 confirmed illnesses and three deaths). Leafy green vegetables such as lettuce and spinach are often the source of foodborne illness. See Bill Marler, *Yet Another Leafy Green E. coli Outbreak and No Traceback to the Farm*, MARLER BLOG (Mar. 2, 2013), http://www.marlerblog.com/legal-cases/yet-another-leafy-green-e-coli-outbreak-and-no-traceback-to-the-farm/#.VcT_Drd4hpk [<http://perma.cc/LZ5Y-XAYY>] (compiling list of 26 *E. coli* outbreaks linked to fresh leafy green vegetables from 1995 to 2011).

⁴³ See Michael R. Taylor, *Keeping Foods Safe During Transport*, FDA VOICE (Jan. 31, 2014), <http://blogs.fda.gov/fdavoices/index.php/2014/01/keeping-foods-safe-during-transport/> [<http://perma.cc/SU9E-HLPM>] (FDA’s Deputy Commissioner noted that while uncommon, food transporters “can introduce contamination even after proper safeguards have been taken by the food producers and processors”).

⁴⁴ See, e.g., Tom Watkins, *Cargill Recalls 36 Million Pounds of Ground Turkey*, CNN (Aug. 4, 2011, 8:07 AM), <http://www.cnn.com/2011/HEALTH/08/03/turkey.recall/> [<https://perma.cc/R6ZZ-T2ZJ>] (noting that “an outbreak of multi-drug-resistant Salmonella Heidelberg that . . . killed one person and sickened 76 others . . . appears to have been traced to ground turkey products” produced at a Cargill facility in Springdale, Arkansas). Although there are over 2,000 different strains of Salmonella, the five most common are *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Newport, *Salmonella* Javiana, and *Salmonella* Heidelberg. Sam Robinson, *The Big Five: Most Common Salmonella Strains in Foodborne Illness Outbreaks*, FOOD SAFETY NEWS (Aug. 19, 2013), <http://www.foodsafetynews.com/2013/08/the-five-most-common-salmonella-strains/#.VuhmTj1ZKo> [<http://perma.cc/6X62-7Z6X>].

⁴⁵ See, e.g., *35 Sick After Eating at Hacienda Don Villo in Channahon, IL*, FOOD SAFETY NEWS (Oct. 4, 2013), <http://www.foodsafetynews.com/2013/10/35-sick-after-eating-at-hacienda-don-villo-in-il/#.VcUEjrd4hpl> [<http://perma.cc/5X6M-WP35>] (*Salmonella* outbreak traced to restaurant).

⁴⁶ See, e.g., *70 Sickened in May WI Salmonella Outbreak Linked to Pork Carnitas*, FOOD SAFETY NEWS (July 30, 2015), <http://www.foodsafetynews.com/2015/07/70-sickened-in-wisconsin-salmonella-outbreak-linked-to-pork-carnitas/#.VcUFXLd4hpk> [<http://perma.cc/EZ8N-63V9>] (describing *Salmonella* outbreak traced to supermarket).

⁴⁷ Elizabeth Scott, *Food Safety and Foodborne Disease in 21st Century Homes*, 14 CAN. J. INFECTIOUS DISEASE 277, 277 (2003) (“[I]t is now accepted that

Industrialized food production,⁴⁸ long supply chains,⁴⁹ and market pressures to reduce food production costs⁵⁰ all increase the risk of contamination by foodborne pathogens. As food processing and shipping systems have continually grown larger and more efficient,⁵¹ foodborne illnesses have become a national problem.

The main causal mechanism for these foodborne diseases is inadequate handling of food and its ingredients, including improper storage, improper preparation, cross-contamination, and improper hygiene by food handlers.⁵² And while most foodborne illnesses are not connected to an outbreak,⁵³ outbreaks of foodborne illnesses are common. On average, over 1,200 outbreaks are reported to the CDC each year.⁵⁴ Many of these outbreaks are large-scale, affecting tens or hundreds of victims. In 2014, for example, caramel apples contaminated with *Listeria monocytogenes* sickened 35 people in 12 states and killed 7,⁵⁵ cilantro contaminated with *Cyclospora* sickened 304

many cases of foodborne illness occur as a result of improper food handling and preparation by consumers in their own kitchens.”)

⁴⁸ Concentrated animal feeding operations, so-called factory farms, contribute to the spread of antibiotic resistant bacteria. See Amanda Belanger, Note, *A Holistic Solution for Antibiotic Resistance: Phasing Out Factory Farms in Order to Protect Human Health*, 11 J. HEALTH & BIOMEDICAL L. 145, 147-56 (2015).

⁴⁹ Long supply chains inhibit the traceability of foodborne illnesses. See William Fisher, *The Importance of Food Traceability*, FOOD SAFETY NEWS (Mar. 19, 2015), <http://www.foodsafetynews.com/2015/03/the-importance-of-food-traceability/#.VcjkBbd4hpk> [<http://perma.cc/94WH-TVXX>].

⁵⁰ See *infra* Section III.A.4.

⁵¹ See Joseph A. Levitt, *FDA's Foods Program*, 56 FOOD & DRUG L.J. 255, 255-56 (2001).

⁵² Diogo Thimoteo da Cunha et al., *Food Safety of Food Services Within the Destinations of the 2014 FIFA World Cup in Brazil: Development and Reliability Assessment of the Official Evaluation Instrument*, 57 FOOD RES. INT'L 95, 96 (2014); Ewen C. D. Todd et al., *Outbreaks Where Food Workers Have Been Implicated In the Spread of Foodborne Disease. Part 3. Factors Contributing to Outbreaks and Description of Outbreak Categories*, 70 J. FOOD PROTECTION 2199, 2199-201 (2007).

⁵³ An “outbreak [of foodborne illness] occurs when two or more people get the same illness from the same contaminated food or drink.” *Tracking and Reporting Foodborne Disease Outbreaks*, CTRS. FOR DISEASE CONTROL & PREVENTION (Feb. 3, 2014) [hereinafter *Foodborne Illness and Outbreak*], http://www.cdc.gov/features/ds_foodborneoutbreaks/ [<http://perma.cc/BE9K-SKFG>]. Foodborne illnesses not part of an outbreak are called “sporadic.” *Foodborne Outbreak Tracking and Reporting*, CTRS. FOR DISEASE CONTROL & PREVENTION (Nov. 2, 2015), <http://www.cdc.gov/foodsafety/fdoss/faq/> [<http://perma.cc/6HWG-D3K9>].

⁵⁴ L. Hannah Gould et al., *Ctrs. for Disease Control & Prevention, Surveillance for Foodborne Disease Outbreaks—United States, 1998-2008*, 62 MORBIDITY & MORTALITY WKLY. REP. tbl.2 (2013), http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6202a1.htm?s_cid=ss6202a1_w [<http://perma.cc/3FV9-RL9Z>] (stating that there were 13,405 foodborne disease outbreaks reported to the CDC during an 11-year period from 1998 to 2008, averaging just over 1,218 per year).

⁵⁵ *Multistate Outbreak of Listeriosis Linked to Commercially Produced, Prepackaged Caramel Apples Made from Bidart Bros. Apples (Final Update)*, CTRS. FOR DISEASE CONTROL & PREVENTION (Feb. 12, 2015, 4:30 PM), <http://www.cdc.gov/listeria/outbreaks/caramel-apples-12-14/index.html> [<http://perma.cc/AT8D-F4Q7>].

people,⁵⁶ gravy contaminated with *Clostridium perfringens* sickened more than 300 guests at a Missouri wedding,⁵⁷ *Salmonella*-tainted raw chicken sickened 634 people in 29 states and Puerto Rico,⁵⁸ and chicken contaminated with *Clostridium perfringens* sickened 216, ironically, at a food safety conference in Baltimore.⁵⁹ But that's not all. Massive, nationwide recalls of tainted food products are commonplace,⁶⁰ and consumer groups and the media regularly investigate food safety issues and provide vivid, often lurid, details of unsafe food. Typical of these reports is the 2014 Consumer Reports investigation of supermarket chicken. Consumer Reports sampled hundreds of supermarket chicken breasts across the country and found that 97% were contaminated with a variety of illness-causing pathogens, including multidrug-resistant bacteria. The report also found that “[m]ore than half of the [chicken breast] samples contained fecal contaminants.”⁶¹

There can be little doubt that our food safety regulatory system bears substantial blame for our unsafe food supply. Comprised of over a dozen federal agencies and thousands of

⁵⁶ *Cyclosporiasis Outbreak Investigations—United States, 2014*, CTRS. FOR DISEASE CONTROL & PREVENTION (Feb. 19, 2015, 1:00 PM), <http://www.cdc.gov/parasites/cyclosporiasis/outbreaks/2014/> [<http://perma.cc/E8N7-E2JF>].

⁵⁷ *More Than 300 Sickened at Missouri Wedding*, FOOD SAFETY NEWS (May 15, 2014), <http://www.foodsafetynews.com/2014/05/300-sickened-at-mo-wedding/#.VcWKHbd4hpk> [<http://perma.cc/5UHH-F8PF>].

⁵⁸ *Multistate Outbreak of Multidrug-Resistant Salmonella Heidelberg Infections Linked to Foster Farms Brand Chicken (Final Update)*, CTRS. FOR DISEASE CONTROL & PREVENTION (July 31, 2014, 4:00 PM), <http://www.cdc.gov/salmonella/heidelberg-10-13/index.html> [<http://perma.cc/MDU2-4YT9>] (stating that there were 634 cases reported from March 1, 2013, to July 11, 2014, with 218 in 2014).

⁵⁹ Dan Flynn, *Report: Chicken on Menu at 2014 Food Safety Summit Was Contaminated*, FOOD SAFETY NEWS (Sept. 25, 2014), <http://www.foodsafetynews.com/2014/09/c-perfringens-in-c/#.VJh06sAOA> [<http://perma.cc/82RV-U5HC>].

⁶⁰ See, e.g., Austin Ramzy, *Blue Bell Recalls All Products After Listeria Outbreak*, N.Y. TIMES (Apr. 21, 2015), <http://www.nytimes.com/2015/04/22/business/blue-bell-recalls-all-products-after-listeria-outbreak.html> [<http://perma.cc/FP6U-APD2>] (ice cream manufacturer recalled all its products due to *Listeria* contamination); Rachel Abrams, *Listeria in Sabra Hummus Prompts New Wave of Recalls*, N.Y. TIMES (Apr. 9, 2015), http://www.nytimes.com/2015/04/10/business/listeria-in-sabra-hummus-prompts-new-wave-of-recalls.html?_r=0 [<http://perma.cc/T5JT-WBFC>] (30,000 cases of hummus recalled after tests revealed *Listeria*); *3 Organic Food Companies Recall Products Over Listeria Fears*, CBS PHILLY (Mar. 24, 2015, 5:29 PM), <http://philadelphia.cbslocal.com/2015/03/24/3-organic-food-companies-recall-products-over-listeria-fears/> [<http://perma.cc/6TPD-EVBQ>] (organic food company recalled about 74,000 cases of frozen and prepackaged products containing spinach due to *Listeria*).

⁶¹ *Dangerous Contaminated Chicken*, CONSUMER REP. (Jan. 2014), <http://www.consumerreports.org/cro/magazine/2014/02/the-high-cost-of-cheap-chicken/index.htm> [<http://perma.cc/6T58-44SJ>]. Ground beef also contains feces. See ERIC SCHLOSSER, FAST FOOD NATION: THE DARK SIDE OF THE ALL-AMERICAN MEAL 197 (2001) (noting that more than three-quarters of ground beef sampled in 1996 by the USDA contained microbes spread by fecal matter and concluding that “[there is] a simple explanation for why eating hamburger meat can now make you seriously ill: There is shit in the meat”).

local health departments, our massive food safety system may appear robust, but continuing high rates of foodborne illnesses suggest otherwise.

B. Federal Food Safety Regulation

Primary responsibility for our food safety rests with the federal government, which is responsible for regulating, inspecting, and enforcing safety standards for the bulk of the foods and beverages we consume.⁶² Despite massive federal spending on food safety⁶³ and multiple federal agencies devoted to ensuring the safety of our food, the effectiveness of our food safety system is hampered by three significant problems: fragmented oversight, limited funding, and insufficient enforcement authority.

1. Fragmentation

Fragmentation is the hallmark of our federal food safety system.⁶⁴ As one observer put it, our food safety system is “a regulatory monstrosity of a dozen poorly coordinated federal agencies that give the illusion of comprehensive coverage but in reality are woefully inadequate to the task of protecting the nation’s food supply.”⁶⁵ Together, the Food and Drug Administration (FDA) and USDA (and its component agencies⁶⁶) are responsible for the vast majority of federal food safety

⁶² Congress has the authority to regulate food in interstate commerce, but states retain authority over food solely sold within the state. *Weigle v. Curtice Bros. Co.*, 248 U.S. 285, 288 (1919).

⁶³ For example, the USDA’s Food Safety and Inspection Service’s fiscal year 2015 budget was just over \$1 billion. U.S. DEP’T OF AGRIC., FY 2015 BUDGET SUMMARY AND ANNUAL PERFORMANCE PLAN 57 (2013), <http://www.obpa.usda.gov/budsum/FY15budsum.pdf> [<http://perma.cc/FVV8-MKZS>].

⁶⁴ The federal food safety network has always been fragmented. Beginning with the passage of the Pure Food and Drugs Act in 1906, Pub. L. No. 59-384, 34 Stat. 768 (1906) (repealed 1938), and the Federal Meat Inspection Act in 1907, Pub. L. No. 59-242, 34 Stat. 1260 (1907) (codified at 21 U.S.C. §§ 601–695 (2014)), the federal government’s food safety structure has been divided among different agencies. For a brief history of fragmentation in the federal food safety systems, see Note, *Reforming the Food Safety System: What if Consolidation Isn’t Enough?*, 120 HARV. L. REV. 1345, 1347-51 (2007).

⁶⁵ See Helena Bottemiller Evich, *Why President Obama and Congress Turned Their Backs on Food Safety*, POLITICO (July 14, 2015, 5:16 AM), <http://www.politico.com/story/2015/07/sickness-in-the-system-120057.html> [<http://perma.cc/E4F9-R7TT>].

⁶⁶ These include, among others, the Agricultural Marketing Service, Grain Inspection, Packers and Stockyards Administration, Animal and Plant Health Inspection Service, and Food Safety and Inspection Service. See RENÉE JOHNSON, CONG. RESEARCH SERV., RS22600, THE FEDERAL FOOD SAFETY SYSTEM: A PRIMER 14-15, apps. A, B (2014) <http://fas.org/sgp/crs/misc/RS22600.pdf> [<http://perma.cc/RC5F-TUNJ>] (listing federal agencies and their responsibilities).

activities.⁶⁷ The FDA is responsible for ensuring the safety of all domestic and imported food products, except for most meats and poultry, but does have regulatory authority over intact eggs (so-called shell eggs). The FDA also regulates animal drugs and animal feed.⁶⁸ The USDA's Food Safety and Inspection Service (FSIS) regulates most meat, poultry, and egg products (that is, anything made from eggs).⁶⁹ Various USDA component agencies are responsible for other food safety and quality activities, such as grading the quality of eggs, dairy, meat, and poultry products.⁷⁰ State and local governments work with federal agencies to perform inspections and other food safety activities.⁷¹ Regulation of restaurants, supermarkets, food trucks, and other retail food establishments is left to the states.⁷² Food safety responsibilities have also been delegated to other federal agencies. In all, 15 federal agencies implement 30 major food safety statutes.⁷³

This crazy quilt system has come under harsh criticism from the U.S. General Accountability Office (GAO) for its inability to coordinate food safety efforts. According to the GAO, fragmented federal oversight of food safety "has caused inconsistent oversight, ineffective coordination, and inefficient use of resources."⁷⁴ For example, in a 2011 report, the GAO pointed to a recall of 500 million *Salmonella*-tainted eggs and egg products to highlight the lack of federal food safety

⁶⁷ See *id.* at 1 (noting that "[f]ederal responsibility for food safety rests primarily with the Food and Drug Administration . . . and the Food Safety and Inspection Service [], which is part of the U.S. Department of Agriculture").

⁶⁸ See U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-91-19A, FOOD SAFETY AND QUALITY: WHO DOES WHAT IN THE FEDERAL GOVERNMENT 4 (1990) [hereinafter GAO Report, WHO DOES WHAT], <http://www.gao.gov/assets/220/213518.pdf> [<http://perma.cc/D3SS-AGTU>].

⁶⁹ See JOHNSON, *supra* note 66, at 5-6.

⁷⁰ See *id.* Multiple component agencies within the USDA have oversight over various aspects of the meat, poultry, and dairy industries. For example, the Food Safety and Inspection Service oversees all domestic and imported meat, poultry, and processed egg products; the Animal and Plant Health Inspection Service oversees the health of agricultural sources; the Grain Inspection, Packers and Stockyards Administration establishes inspection and quality guidelines for grain; the Agricultural Marketing Service establishes standards for dairy, fruit, vegetable, livestock, meat, poultry, and egg products; and the Agricultural Research Service conducts food safety research. And the list goes on. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-05-549T, OVERSEEING THE U.S. FOOD SUPPLY: STEPS SHOULD BE TAKEN TO REDUCE OVERLAPPING INSPECTIONS AND RELATED ACTIVITIES 21 (2005), <http://www.gao.gov/products/GAO-05-549T> [<http://perma.cc/SF8P-7YNU>].

⁷¹ See JOHNSON, *supra* note 66, at 1.

⁷² See *id.*

⁷³ See *id.* at 1-2; see also *id.* at 14-15, apps. A, B.

⁷⁴ See U.S. GOV'T ACCOUNTING OFFICE, GAO-08-794, FOOD SAFETY: SELECTED COUNTRIES' SYSTEMS CAN OFFER INSIGHTS INTO ENSURING IMPORT SAFETY AND RESPONDING TO FOODBORNE ILLNESS 2 (2008) [hereinafter FOOD SAFETY: SELECTED COUNTRIES], <http://www.gao.gov/new.items/d08794.pdf> [<http://perma.cc/8KDP-U8LJ>].

coordination.⁷⁵ The eggs subject to the recall were implicated in an outbreak of *Salmonella* Enteritidis that likely sickened nearly 2,000 people.⁷⁶ As the GAO pointed out, no single agency was in charge of the eggs or the facility the eggs came from, and there was no coordination between the many agencies that played a role in ensuring the safety of the eggs.⁷⁷ While the FDA was responsible for the eggs that remained in their shells, the FSIS was responsible for the safety of eggs that had been processed into egg products. The USDA's Agricultural Marketing Service (AMS) is responsible for grading the eggs (i.e., "Grade A"), but it does not test eggs for pathogens such as *Salmonella*.⁷⁸ Once the *Salmonella* outbreak occurred, the FDA investigation uncovered unsanitary conditions at several of the egg supplier's facilities, "including dead chickens, rodents and towers of manure."⁷⁹ Yet shortly before the outbreak, the AMS had been at the same facilities to perform egg-grading services.⁸⁰ Although aware of the deplorable conditions at the facility, the AMS never informed the FDA of the conditions at the facilities. That was not their job.⁸¹

Despite obvious problems resulting from fragmentation of authority, Congress has not seen fit to consolidate the federal food safety system. Recent federal legislation enacted in 2011 in response to a rash of outbreaks⁸² has not improved the situation. The FSMA⁸³ was intended to modernize food safety and revamp outdated regulations,⁸⁴ but it has done nothing to address the

⁷⁵ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-11-318SP, OPPORTUNITIES TO REDUCE POTENTIAL DUPLICATION IN GOVERNMENT PROGRAMS, SAVE TAX DOLLARS, AND ENHANCE REVENUE 8 (2011) [hereinafter OPPORTUNITIES], <http://www.gao.gov/new.items/d11318sp.pdf> [<http://perma.cc/ZY6L-FQAS>].

⁷⁶ *Multistate Outbreak of Human Salmonella Enteritidis Infections Associated with Shell Eggs (Final Update)*, CTRS. FOR DISEASE CONTROL & PREVENTION (Dec. 2, 2010) [hereinafter *Multistate Outbreak of Salmonella Associated with Eggs*], <http://www.cdc.gov/salmonella/enteritidis/> [<http://perma.cc/4VAG-LYJA>].

⁷⁷ See OPPORTUNITIES, *supra* note 75, at 8.

⁷⁸ See *id.*

⁷⁹ *Employee at Maine Egg Farm Killed by Coworker*, FOOD SAFETY NEWS (Aug. 22, 2013), <http://www.foodsafetynews.com/2013/08/employee-at-maine-egg-farm-killed-by-coworker/#.VEQhf9apqRc> [<http://perma.cc/DS5Q-HTEK>].

⁸⁰ U.S. DEP'T OF AGRIC., OFFICE OF INSPECTOR GEN., AUDIT REPORT 50601-0001-23, USDA CONTROLS OVER SHELL EGG INSPECTIONS 11-13, 13 n.42, 17-18 (2012), <http://www.usda.gov/oig/webdocs/50601-0001-23.pdf> [<http://perma.cc/6WJS-5WQN>].

⁸¹ *Id.*

⁸² See Gregory M. Schieber, Note, *The Food Safety Modernization Act's Tester Amendment: Useful Safe Harbor for Small Farmers and Food Facilities or Weak Attempt at Scale-Appropriate Farm and Food Regulations?*, 18 DRAKE J. AGRIC. L. 239, 240-41 (2013) (listing outbreaks).

⁸³ 21 U.S.C. § 2201 (2012).

⁸⁴ See Schieber, *supra* note 82, at 244-45.

fragmentation problem⁸⁵ and, in fact, has only affected the operations of one agency, the FDA.⁸⁶ As a result of these and other problems, food safety oversight remains on the GAO's "high-risk" list, which is a compilation of government agencies and program areas "that are high risk" and "are [most] in need of transformation."⁸⁷

2. Inadequate Funding

Federal food safety programs have long been underfunded,⁸⁸ leaving both the FDA and the FSIS with insufficient funding for food safety inspection and enforcement.⁸⁹ But there is also a strikingly unequal allocation of funding. The FDA, which currently oversees 80%–90% of the food supply⁹⁰ and is responsible for the food associated with twice as many outbreaks as FSIS-regulated food,⁹¹ receives less than half the available funding. On the other hand, the FSIS is responsible for only 10%–20% of our food supply,⁹² but it receives approximately 60% of the total food safety budget allocated to both agencies.⁹³

Over the years, Congress has increased the FDA's duties through the enactment of more than 100 new laws, but

⁸⁵ Diana R. H. Winters, *Not Sick Yet: Food-Safety-Impact Litigation and Barriers to Justiciability*, 77 BROOK. L. REV. 905, 906 n.9 (2012) (stating that the FSMA "does not . . . address the inefficiencies or inconsistencies caused by the fact that multiple agencies have authority over food regulation").

⁸⁶ See JOHNSON, *supra* note 66, at 5.

⁸⁷ U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-15-290, HIGH RISK SERIES: AN UPDATE 1, 262-66 (2015), <http://www.gao.gov/assets/670/668415.pdf> [<http://perma.cc/9F9F-RJ3B>].

⁸⁸ See Michael R. Taylor & Sandra A. Hoffmann, *Redesigning Food Safety*, ISSUES (2001), http://issues.org/17-4/p_taylor/ [<http://perma.cc/662G-RU5K>] (noting in 2001 that "[t]he FDA's food safety program is so severely underfunded that it cannot even afford to analyze risk priorities systematically").

⁸⁹ See JOHNSON, *supra* note 66, at 9; see also Dennis G. Maki, *Coming to Grips with Foodborne Infection—Peanut Butter, Peppers, and Nationwide Salmonella Outbreaks*, 360 NEW ENG. J. MED. 949, 952 (2009) (noting that prior to the adoption of the FSMA, the FDA and the USDA were already limited in their ability to complete inspections "by insufficient personnel and inadequate budgetary support").

⁹⁰ See JOHNSON, *supra* note 66, at 9.

⁹¹ See CTR. FOR SCI. IN THE PUBLIC INTEREST, OUTBREAK ALERT! 2008: CLOSING THE GAPS IN OUR FEDERAL FOOD-SAFETY NET i (2008) [hereinafter CLOSING THE GAPS], http://cspinet.org/new/pdf/outbreak_alert_2008_report_final.pdf [<http://perma.cc/5HHP-289Z>]. Although the text of the report refers to the USDA, the products covered by the report's analysis are beef, pork, poultry, and other meats regulated by the FSIS. See *id.* at 19, app. A (listing foodborne outbreaks and illnesses from 1990 to 2006 by federal agency and food categories).

⁹² See JOHNSON, *supra* note 66, at 9.

⁹³ See *id.*

Congress has not increased the FDA's budget to keep pace.⁹⁴ The FSMA further increases the FDA's responsibilities, but funding remains insufficient,⁹⁵ leaving the FDA unable to modernize its inspection processes, retrain inspectors and staff members to meet new requirements, and properly oversee food imports.⁹⁶ But the FSIS is no better off. Its budget has also failed to keep pace,⁹⁷ with most of its funding going towards its outdated requirement that meat and poultry processors be physically inspected.⁹⁸

3. Lack of Sufficient Enforcement Authority

The third major problem with our food safety system is the lack of enforcement authority. Both the FDA and the FSIS are hamstrung in their ability to take action to protect the food we eat. The FDA, which was recently given a much-needed regulatory tool, mandatory food recall authority,⁹⁹ has only a fraction of the inspectors it needs to oversee the hundreds of thousands of facilities it is charged with inspecting.¹⁰⁰ Meanwhile, the FSIS, which has more than one inspector for every one of the thousands of facilities it covers—a vestige of the system of organoleptic inspection¹⁰¹ that has been in place for over 100

⁹⁴ Kristin Choo, *Hungry for Change*, 95 A.B.A. J. 56, 60 (2009) (noting that “Congress has adopted some 120 new laws that have expanded the FDA’s responsibilities without commensurate increases in funding”).

⁹⁵ See Evich, *supra* note 65 (noting that almost five years after passage of the FSMA, “funding is more than \$276 million behind where it needs to be”); William Neuman, *On Food Safety, a Long List but Little Money*, N.Y. TIMES (Aug. 22, 2011), <http://www.nytimes.com/2011/08/23/business/with-a-long-list-and-short-on-money-fda-tackles-food-safety.html?scp=5&sq=%22food%20safety%22%20fund&st=cse> [<http://perma.cc/6C9H-CQ8L>]; Ron Nixon, *Funding Gap Hinders Law for Ensuring Food Safety*, N.Y. TIMES (Apr. 7, 2015), <http://www.nytimes.com/2015/04/08/us/food-safety-laws-funding-is-far-below-estimated-requirement.html> [<http://perma.cc/PXR6-B8H4>].

⁹⁶ See Nixon, *supra* note 95.

⁹⁷ See Choo, *supra* note 94, at 60 (noting that meat and poultry consumption in the United States doubled from 1981 to 2007, but the FSIS budget increased only 25%).

⁹⁸ Richard A. Merrill & Jeffrey K. Francer, *Organizing Federal Food Safety Regulation*, 31 SETON HALL L. REV. 61, 100-02 (2000).

⁹⁹ See Food Safety Modernization Act, 21 U.S.C. § 350l (2012).

¹⁰⁰ See Evich, *supra* note 65 (noting that in 2009, the FDA’s Office of Regulatory Affairs had fewer than 700 inspectors, yet was responsible for inspecting hundreds of thousands of food facilities).

¹⁰¹ Organoleptic inspection is a static, physical inspection process.

Inspectors from the USDA’s Food Safety and Inspection Service [] generally conduct post-mortem inspections while stationed at fixed points along the slaughter processing line. Using organoleptic methods, that is, relying on sight, touch and smell, the inspectors examine the head, viscera, and exterior of each carcass for signs of adulteration, such as tumors, inflammation, parasites, and other diseases The method of inspection just described had remained unchanged for decades.

years¹⁰²—does not have recall authority and cannot require the recall of contaminated meat or poultry.

Perhaps more striking is the FSIS's anemic approach to enforcement. The FSIS inspection process is not designed to stop meat and poultry infected with pathogens like *Salmonella* and *Listeria* from entering the marketplace.¹⁰³ Indeed, the FSIS takes the position that it is not required to ensure that meat and poultry are free from deadly pathogens.¹⁰⁴ Instead, the FSIS places this responsibility on whomever prepares the meat and poultry for human consumption.¹⁰⁵ In other words, the FSIS takes the position that consumers are ultimately responsible for their own food safety.¹⁰⁶

The consequences of the FSIS's astonishing tolerance for pathogenic contamination and lack of recall authority can be seen in the 2013–2014 outbreak of multidrug-resistant

¹⁰² See Mariano-Florentino Cuéllar, *Modeling Partial Agency Autonomy in Public-Health Policymaking*, 15 THEORETICAL INQUIRIES IN L. 471, 490-91 (2014).

¹⁰³ See *id.* at 491.

¹⁰⁴ Thomas O. McGarity, *Federal Regulation of Mad Cow Disease Risks*, 57 ADMIN. L. REV. 289, 313 (2005). The USDA, through its component agency the FSIS, ensures that meat is not “adulterated” and labels meat as “Inspected and Passed” prior to its sale. See *id.* at 312. “Adulterated” animal carcasses cannot receive an “inspected and passed” label and cannot be sold. See 21 U.S.C. § 604 (2012) (adulterated carcasses must be marked “[i]nspected and condemned” and must be “destroyed for food purposes . . . in the presence of an inspector”). However, meat contaminated by *Salmonella* is not considered adulterated and can be sold. *Am. Pub. Health Ass’n v. Butz*, 511 F.2d 331, 335 (D.C. Cir. 1974) (concluding that the USDA’s inspection labels on meat sent to market “[are] not false or misleading because of the possibility that salmonellae may be present in the poultry products inspected”). Indeed, the potentially deadly pathogen *Salmonella* is not considered an adulterant. See *id.* at 334-35 (noting that “the presence of *Salmonella* . . . does not constitute adulteration”); see also *Supreme Beef Processors, Inc. v. USDA*, 275 F.3d 432, 438-39 (5th Cir. 2001) (observing that *Salmonella* is not a per se adulterant). At the time of the *Butz* case, the USDA did not consider any pathogens in meat an adulterant. Since then, the USDA has declared *E. coli* O157:H7 an adulterant in raw, nonintact beef products (i.e., ground beef) as well as raw, intact components used to manufacture nonintact products. See *Tex. Food Indus. Ass’n v. Espy*, 870 F. Supp. 143, 145, 149 (W.D. Tex. 1994) (upholding the declaration of *E. coli* O157:H7 as an adulterant). Six additional strains of *E. coli* have since been declared adulterants. See *Shiga Toxin-Producing Escherichia coli in Certain Raw Beef Products*, 77 Fed. Reg. 31,975, 31,975 (May 31, 2012) (to be codified at 9 C.F.R. pts. 416, 417, 430). These strains of *E. coli* are the only pathogens the FSIS considers adulterants. In 2014, the FSIS rejected a request that it declare certain antibiotic-resistant strains of *Salmonella* adulterants. Letter from Daniel L. Engeljohn, Assistant Adm’r, Office of Policy and Program Dev., FSIS, to Sarah Klein & Caroline Smith DeWaal, Ctr. for Sci. in the Pub. Interest (July 31, 2014), <http://www.fsis.usda.gov/wps/wcm/connect/73037007-59d6-4b47-87b7-2748edaa1d3e/FSIS-response-CSPI-073114.pdf?MOD=AJPERES> [http://perma.cc/73TC-9ECU].

¹⁰⁵ See *Butz*, 511 F.2d at 334 (noting that the USDA stated in a letter dated August 18, 1971, that “the American consumer knows that raw meat and poultry are not sterile and, if handled improperly, perhaps could cause illness”). The court concluded that “American housewives and cooks normally are not ignorant or stupid and their methods of preparing and cooking of food do not ordinarily result in salmonellosis.” *Id.*

¹⁰⁶ *Id.*

Salmonella linked to Foster Farms chicken. Both the FSIS and Foster Farms were aware that tainted chicken was being shipped from Foster Farms for years before Foster Farms finally initiated a voluntary recall.¹⁰⁷ The outbreak resulted in 634 confirmed cases of *Salmonella* Heidelberg¹⁰⁸ infection nationwide, with 242 people hospitalized.¹⁰⁹ While no firm estimates exist, the number sickened during this outbreak likely exceeded 18,000.¹¹⁰

C. State and Local Food Safety Regulation

The situation is no better at the local level. In many respects, local governments represent the first line of defense against foodborne illnesses.¹¹¹ “State and local governments have the main responsibility for food produced or sold within their borders.”¹¹² State and local health departments inspect grocery stores and retail food establishments, provide technical assistance to food suppliers, educate consumers about food safety, implement food safety standards for certain foods manufactured within state borders, identify outbreaks, and investigate cases of suspected foodborne illness.¹¹³ Thus, state and local governments are the principal regulatory actors responsible for inspecting restaurants to control foodborne illness.¹¹⁴ This oversight is

¹⁰⁷ See Lynne Terry, *A Game of Chicken: USDA Repeatedly Blinking When Facing Salmonella Outbreaks Involving Foster Farms*, OREGONLIVE.COM (May 1, 2015), <http://www.oregonlive.com/usda-salmonella/> [<http://perma.cc/98CB-P4EM>].

¹⁰⁸ *Salmonella* Heidelberg is one of the most common strains of *Salmonella* associated with foodborne illness. See Robinson, *supra* note 44.

¹⁰⁹ See *supra* note 58.

¹¹⁰ See NRDC, FOSTER FARMS SPREAD ANTIBIOTIC RESISTANT BACTERIA AROUND THE NATION, SICKENING HUNDREDS 1 (2014), <http://www.nrdc.org/food/saving-antibiotics/files/foster-farms-antibiotic-overuse-FS.pdf> [<http://perma.cc/J7J8-MSG8>]. This figure is based on the CDC’s estimate that there are 29 undiagnosed cases of *Salmonella* for every diagnosed case. See CTRS. FOR DISEASE CONTROL & PREVENTION, FOOD SAFETY PROGRESS REPORT FOR 2012 (2013), <http://www.cdc.gov/features/dsfoodnet2012/food-safety-progress-report-2012-508c.pdf> [<http://perma.cc/7MCB-YNGS>].

¹¹¹ U.S. FOOD & DRUG ADMIN., WHAT YOU SHOULD KNOW ABOUT GOVERNMENT RESPONSE TO FOODBORNE ILLNESS OUTBREAKS (2009), <http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm180323.htm#statelocal> [<http://perma.cc/WZP4-ENDW>]; INST. OF MED. & NAT’L RESEARCH COUNCIL, ENHANCING FOOD SAFETY: THE ROLE OF THE FOOD AND DRUG ADMINISTRATION 43, 50-51 (Robert B. Wallace & Maria Oria eds., 2010) [hereinafter ENHANCING FOOD SAFETY].

¹¹² ENHANCING FOOD SAFETY, *supra* note 111, at 1 n.2.

¹¹³ *Id.* at 50-51.

¹¹⁴ Kevin S. Murphy et al., *Does Mandatory Food Safety Training and Certification for Restaurant Employees Improve Inspection Outcomes?*, 30 INT’L J. HOSP. MGMT. 150, 151 (2011) (noting that state and local government inspectors are the “primary regulatory agents to conduct routine restaurant inspections as a strategic tool to reduce or eliminate all the risk factors associated with foodborne illnesses”).

especially important since the “majority of food contamination episodes happen away from home.”¹¹⁵

Yet food safety remains a significant problem at restaurants, where there is ample evidence of unsanitary and dangerous food handling practices. For example, there is evidence of pervasive high-risk “ground beef handling policies and practices in restaurants” that increase the risk of *E. coli* contamination;¹¹⁶ many restaurants do not properly cook or handle chicken;¹¹⁷ restaurant managers lack knowledge of proper food safety practices for handling and preparing chicken;¹¹⁸ high-risk egg-preparation practices in restaurants are prevalent;¹¹⁹ inadequate food cooling policies and practices appear to be common;¹²⁰ improper handling of fresh vegetables and fruit is commonplace;¹²¹ and food workers regularly work while sick¹²² and do not exercise safe hygiene practices.¹²³ Furthermore, periodic restaurant inspections appear to be an ineffective way to promote food safety. Rates of inspections vary across

¹¹⁵ Maria L. Loureiro, *Liability and Food Safety Provision: Empirical Evidence from the US*, 28 INT'L REV. L. & ECON. 204, 206 (2008).

¹¹⁶ See April K. Bogard et al., *Ground Beef Handling and Cooking Practices in Restaurants in Eight States*, 76 J. FOOD PROTECTION 2132, 2132 (2013) (mentioning a study of “ground beef handling policies and practices” in over 300 restaurants in eight states, in which researchers found pervasive high-risk “ground beef handling policies and practices in restaurants” that increased the risk of *E. coli*).

¹¹⁷ Laura Green Brown et al., *Frequency of Inadequate Chicken Cross-Contamination Prevention and Cooking Practices in Restaurants*, 76 J. FOOD PROTECTION 2141, 2141 (2013).

¹¹⁸ *Id.* at 2144.

¹¹⁹ Robin Lee et al., *Prevalence of High-Risk Egg-Preparation Practices in Restaurants That Prepare Breakfast Egg Entrees: An EHS-Net Study*, 67 J. FOOD PROTECTION 1444 (2004) (finding that risky egg practices are common in restaurants).

¹²⁰ Laura Green Brown et al., *Restaurant Food Cooling Practices*, 75 J. FOOD PROTECTION 2172, 2175-76 (2012) (discussing the prevalence of inadequate food-cooling policies and practices).

¹²¹ See, e.g., Elizabeth Kirkland et al., *Tomato Handling Practices in Restaurants*, 72 J. FOOD PROTECTION 1692, 1692 (2009) (finding that unsafe tomato-handling practices are commonly observed in restaurants).

¹²² Steven Sumner et al., *Factors Associated with Food Workers Working While Experiencing Vomiting or Diarrhea*, 74 J. FOOD PROTECTION 215, 215-16 (2011) (finding that nearly 12% of restaurant workers worked while ill with vomiting or diarrhea in the previous year); see also Daniel Victor, *Chipotle Will Close Stores for Food Safety Meetings After Outbreaks*, N.Y. TIMES (Jan. 15, 2016), http://www.nytimes.com/2016/01/16/business/chipotle-close-stores-e-coli-norovirus-outbreaks.html?_r=0 [<http://perma.cc/W3MJ-JDZW>] (reporting that the restaurant chain Chipotle has admitted that foodborne illness outbreaks that sickened hundreds of customers in California and Massachusetts were caused by sick employees).

¹²³ Laura R. Green et al., *Factors Related to Food Worker Hand Hygiene Practices*, 70 J. FOOD PROTECTION 661 (2007); Laura R. Green et al., *Food Worker Hand Washing Practices: An Observation Study*, 69 J. FOOD PROTECTION 2417 (2006) (food workers wash hands less than one-third of the time necessary when engaging in activities for which hand washing is recommended).

jurisdictions,¹²⁴ and inspections are often improperly conducted or not conducted at all.¹²⁵ Indeed, empirical evidence suggests that local restaurant inspections can be unreliable and uninformative to consumers due to flawed implementation, inconsistent application of standards, and gaming of results by food vendors.¹²⁶ And in any event, research indicates that inspection results are not an accurate predictor of foodborne illness outbreaks.¹²⁷ In other words, a restaurant's inspection record is not a reliable indication of whether it will or will not subsequently infect a patron with a foodborne illness.

¹²⁴ See, e.g., Don Sapatkin, *Restaurant Inspection Rates Vary by County*, PHILLY.COM (July 18, 2015), http://articles.philly.com/2015-07-18/news/64539884_1_inspection-reports-fewer-violations-food-safety [<http://perma.cc/5K7X-GRQV>] (noting that Pennsylvania restaurant inspection rates vary by county).

¹²⁵ See, e.g., Joel Grover & Matt Schrader, *Food Poisoning, Filth Exposed at Popular LA Restaurants*, NBC S. CAL. (Apr. 29, 2015), <http://www.nbclosangeles.com/investigations/LA-County-Restaurants-Inspections-301592901.html> [<http://perma.cc/XK5Z-8Q7G>] (finding that Los Angeles County is failing to inspect many restaurants as frequently as required, if at all); Joel Grover & Matt Schrader, *Dirty Secret: Inspectors Fail to Reveal Salmonella Outbreak at Popular Restaurant*, NBC4 (Mar. 26, 2015), <http://www.nbclosangeles.com/news/local/Dirty-Secret-Inspectors-Fail-to-Reveal-Salmonella-Outbreak-at-Popular-Restaurant-297615461.html> [<http://perma.cc/2ME5-GREW>] (noting that state and local health officials failed to inform public of *Salmonella* outbreak at restaurant, leading to more illnesses).

¹²⁶ See Daniel E. Ho, *Fudging the Nudge: Information Disclosure and Restaurant Grading*, 122 YALE L.J. 574, 585-87 (2012); see also Stephanie K. Baer, *What That Restaurant Letter Grade Isn't Telling You About Health and Cleanliness*, SAN GABRIEL VALLEY TRIB. (June 25, 2015, 10:32 AM), <http://www.sgvtribune.com/lifestyle/20150625/what-that-restaurant-letter-grade-isnt-telling-you-about-health-and-cleanliness> [<http://perma.cc/5FL2-XQUT>] (noting that under the public grading system, restaurants often earn the highest grades despite unsafe practices and conditions uncovered during inspection).

¹²⁷ See Timothy F. Jones et al., *Restaurant Inspection Scores and Foodborne Disease*, 10 EMERGING INFECTIOUS DISEASES 688, 688-91 (2004) (noting that data from 167,574 restaurant inspections over a seven-year period in Tennessee failed to find a difference in the mean inspection scores of restaurants experiencing foodborne disease outbreaks from those restaurants with no reported outbreaks); Miguel A. Cruz et al., *An Assessment of the Ability of Routine Restaurant Inspections to Predict Food-Borne Outbreaks in Miami-Dade County, Florida*, 91 AM. J. PUB. HEALTH 821, 821-22 (2001) (finding "that restaurant inspections in Miami-Dade County do not reliably identify restaurants that are at increased risk of outbreaks of food-borne illness"); Alan D. Penman et al., *Failure of Routine Restaurant Inspections: Restaurant-Related Foodborne Outbreaks in Alabama, 1992, and Mississippi, 1993*, 58 J. ENVTL. HEALTH 23 (1996) (finding that "inspections alone cannot guarantee prevention of foodborne illness outbreaks"). But see Kathleen Irwin et al., *Results of Routine Restaurant Inspections Can Predict Outbreaks of Foodborne Illness: The Seattle King County Experience*, 79 AM. J. PUB. HEALTH 586, 586, 589 (1989) (comparing 28 restaurants that were associated with an outbreak and 56 control restaurants and finding that "[r]estaurants with poor inspection scores and violations of proper temperature controls of potentially hazardous foods were, respectively, five and ten times more likely to have outbreaks than restaurants with better results"); Paul A. Simon et al., *Impact of Restaurant Hygiene Grade Cards on Foodborne-Disease Hospitalizations in Los Angeles County*, 67 J. ENVTL. HEALTH 32, 36 (2005) (finding inspections combined with public posting of restaurant hygiene grades to be effective in reducing the incidence of foodborne disease).

D. *Private Regulation of Food Safety and the Reduction of Risk*

In light of these problems, some food suppliers have turned to private risk-control measures to assure the safety of the food they sell. They do this out of fear; there have been instances in which the market has imposed harsh sanctions on a seller of tainted food.¹²⁸ These private risk-control measures take various forms. Large retailers with sufficient resources, like Costco, undertake their own testing to ensure that the food they purchase for resale is safe and properly labeled.¹²⁹ Other food suppliers, eager to provide assurances to increasingly wary consumers, develop and implement their own standards, which they then publicize. Purdue Farms, a national supplier of chickens, recently announced its own food safety standard: its chickens are no longer routinely treated with antibiotics.¹³⁰ The routine use of antibiotics in chickens is believed to contribute to the spread of antibiotic-resistant foodborne pathogens,¹³¹ which is a significant consumer concern.¹³² Purdue's strategy is simple: allay customers' fears and increase sales by promoting the safety of its chickens. But not all food suppliers have the resources, capacity, or desire to take matters into their own hands.

Others have turned to third parties to reduce their risk of transmitting foodborne pathogens. Retailers like Wal-Mart and Wegmans often require certifications from third-party food safety inspectors prior to accepting food shipments from suppliers.¹³³

¹²⁸ A. Mitchell Polinsky & Steven Shavell, *The Uneasy Case for Product Liability*, 123 HARV. L. REV. 1437, 1443-44 & n.17 (2010) (listing examples). In reality, these cases are rare. Most cases of foodborne illness are never connected to a source. See *infra* Section III.A.2.

¹²⁹ See Karen Stabner, *Private Eyes in the Grocery Aisles*, N.Y. TIMES (Apr. 4, 2015), http://www.nytimes.com/2015/04/05/business/private-eyes-in-the-grocery-aisles.html?_r=0 [<http://perma.cc/SPU6-4UPD>].

¹³⁰ Stephanie Strom, *Purdue Sharply Cuts Antibiotic Use in Chickens and Jabs at Its Rivals*, N.Y. TIMES (July 31, 2015), <http://www.nytimes.com/2015/08/01/business/purdue-and-the-race-to-end-antibiotic-use-in-chickens.html> [<http://perma.cc/6ZXY-RUDZ>].

¹³¹ Alexander Zaitchik, *Big Ag's Big Lie: Factory Farms, Your Health and the New Politics of Antibiotics*, SALON (Jan. 12, 2014, 7:00 AM), http://www.salon.com/2014/01/12/big_ags_big_lie_factory_farms_your_health_and_the_new_politics_of_antibiotics/ [<http://perma.cc/9Q69-69JM>].

¹³² David Kesmodel et al., *Meat Companies Go Antibiotics-Free as More Consumers Demand It*, WALL ST. J. (Nov. 3, 2014, 10:30 PM), <http://www.wsj.com/articles/meat-companies-go-antibiotics-free-as-more-consumers-demand-it-1415071802> [<http://perma.cc/J2LJ-XZ8N>] (noting consumer concern with widespread use of antibiotics and the industry's response).

¹³³ See Stephanie Armour et al., *Food Sickens Millions as Company-Paid Checks Find It Safe*, BLOOMBERG MKTS. (Oct. 11, 2012, 12:00 AM), <http://www.bloomberg.com/news/articles/2012-10-11/food-sickens-millions-as-industry-paid-inspectors-find-it-safe> [<http://perma.cc/9JK3-98DD>].

These third-party certifications, which purport to provide an independent assessment of the food safety practices of farmers or food processors, appear to do what government inspectors do not—provide independent and rigorous inspections of food to ensure its safety.

While third-party certifications may appear to be an effective response to weak government regulation, third-party certifications are controversial for one simple reason: they lack regulatory controls. Indeed, the Roman poet Juvenal's famous query, "Who will guard the guardians?"¹³⁴ could also be asked of the third-party certification process. Third-party certifiers are not governed by any uniform standard, are not licensed or subject to any oversight, and do not have to report their findings to anyone except their paying customers, the food suppliers they inspect.¹³⁵ Unsurprisingly, there have been numerous instances in which food suppliers implicated in outbreaks of foodborne illness were awarded top safety ratings by third-party inspections shortly before the outbreak.¹³⁶ But that's not all. There is also an inherent conflict of interest in the third-party certification process. Third-party verifiers are financially dependent on their clients—the food suppliers. Not only does this undermine confidence in the third-party certification process, it leads to untrustworthy certifications.¹³⁷ At bottom, the current private certification process is highly problematic, offering an unverifiable promise of safer food.¹³⁸

¹³⁴ See *Salvato v. Ill. Dep't of Human Rights*, 155 F.3d 922, 923 (7th Cir. 1998) ("[Q]uis custodiet ipsos custodes" (quoting the Roman scholar Juvenal)).

¹³⁵ There are currently no standards for domestic third-party certifications in the United States. The FDA, however, has promulgated rules providing for accreditation of third-party certification bodies to conduct food safety audits of foreign food suppliers. See *Accreditation of Third-Party Certification Bodies to Conduct Food Safety Audits and to Issue Certifications*, 80 Fed. Reg. 74,570 (Nov. 27, 2015) (to be codified at 21 C.F.R. pts. 1, 11, 16).

¹³⁶ See, e.g., Michael Moss & Andrew Martin, *Food Problems Elude Private Inspectors*, N.Y. TIMES (Mar. 5, 2009), [http://www.nytimes.com/2009/03/06/business/06food.html?_r=3&scp=4&sq=food%20safety&st=cse& \[http://perma.cc/V9TT-YYMS\]](http://www.nytimes.com/2009/03/06/business/06food.html?_r=3&scp=4&sq=food%20safety&st=cse& [http://perma.cc/V9TT-YYMS]) (noting that third-party auditors failed to detect problems at food plants whose contaminated products later sickened and killed consumers); William Neuman, *Listeria Outbreak Traced to Cantaloupe Packing Shed*, N.Y. TIMES (Oct. 19, 2011), [http://www.nytimes.com/2011/10/20/business/listeria-outbreak-traced-to-colorado-cantaloupe-packing-shed.html \[http://perma.cc/QET3-RUQC\]](http://www.nytimes.com/2011/10/20/business/listeria-outbreak-traced-to-colorado-cantaloupe-packing-shed.html [http://perma.cc/QET3-RUQC]) (noting that a private auditor had inspected its facility days before a deadly outbreak).

¹³⁷ See Lytton & McAllister, *supra* note 35, at 295 (noting that "[c]onflict of interest is a structural feature of any private system of standards compliance in which the auditor is paid by the entity being audited"); see also Moss & Martin, *supra* note 136.

¹³⁸ See Stephanie Armour et al., *supra* note 133 (detailing instances of third-party inspections failing to detect problems). Despite the problems associated with third-party certification, Lytton and McAllister argue that third-party certification can provide benefits and offer strategies to reduce conflicts of interest and improve the reliability of third-party certification and verifications. See Lytton & McAllister, *supra*

There is, however, another third-party risk reduction service that appears to overcome Juvenal's concern: insurance. Insurance differs from other third-party risk reduction services in one significant respect. Insurers do not just assess risk, they bear the financial responsibility for risks. Thus, unlike third-party certifiers, insurers have a direct financial stake in ensuring that risk is not only correctly assessed, but lowered. This difference gives insurance a comparative advantage over other types of third-party risk reduction services and makes insurance an attractive option for private regulation of food safety risk.¹³⁹

II. INSURANCE AS PRIVATE REGULATION

There is risk in food. But the risk of foodborne illnesses may seem no different than many other societal risks people face every day. Yet when asked to identify a means to minimize societal risk, few are likely to respond by shouting, "Insurance!" This is not surprising. To most people, insurance is an afterthought, a gray and dreary necessity of life. We need insurance to drive. We need it to buy a house. We need insurance so we don't go broke when calamity strikes. This is how most people typically think of insurance. But insurance does much more than simply cover individual losses. Insurance can regulate behavior—and in doing so can reduce risk in a socially beneficial way. This is the allure of liability insurance as a regulator of food safety—its potential to mitigate societal risks associated with food.

A. *The Nature of Liability Insurance*

Insurance is, at its core, a risk-spreading device. Insurance is generally understood as an agreement to provide indemnification for a loss; the insured pays an adequate premium,¹⁴⁰ and in exchange, the insurer provides coverage that

note 35; see also Lesley K. McAllister, *Regulation by Third-Party Verification*, 53 B.C. L. REV. 1, 2-4 (2012) (suggesting greater government reliance on third-party certification to meet regulatory objectives).

¹³⁹ As Tom Baker and Sean Griffith put it, insurers "bond their advice not only with their reputation, but also with a commitment to pay their customers' losses. Thus . . . insurers have the best incentive to get that advice right and should have a comparative advantage over other suppliers of loss prevention advice for this reason." Tom Baker & Sean J. Griffith, *The Missing Monitor in Corporate Governance: The Directors' & Officers' Liability Insurer*, 95 GEO. L.J. 1795, 1818 (2007) (footnote omitted).

¹⁴⁰ An adequate premium will cover the expected claims of the pool of insureds, plus a loading charge to cover administrative expenses, taxes, other non-claim-related costs, and provide a profit. For a concise explanation of how insurance premiums are calculated, see John Aloysius Cogan Jr., *Health Insurance Rate Review*, 88 TEMPLE L. REV. 411, 431-32 (2016). An actuarially fair premium is equal to expected

is designed to restore the insured to the same financial condition that was enjoyed just prior to the loss.¹⁴¹ In order to provide such coverage, the insurer must be able to accurately predict losses. Yet an insurer cannot accurately predict the fortuitous losses that will be incurred by any particular insured. Instead, the insurer relies on the law of large numbers. If an insurer provides coverage for a sufficiently large pool of insureds whose expected losses are uniform and noncorrelated, the aggregate claims of the group will equal the expected loss of any individual insured in the pool multiplied by the number of insureds in the pool.¹⁴² In other words, the expected total risk of a pool is distributed among the individuals in the pool.¹⁴³ Each of the insureds substitutes a small certain cost—the premium—for the possibility of a larger uncertain loss.¹⁴⁴ This is how risk is spread. From an economic perspective, spreading risk is socially desirable because it reduces uncertainty and frees up capital for investment that might otherwise be retained as a hedge against loss.¹⁴⁵

Liability insurance, a type of insurance that covers claims arising from legal liability,¹⁴⁶ also spreads risk. But because it makes payments to third parties—to those injured by the insured—rather than the insured, liability insurance

value, which is the mean of the sums of the probability of loss multiplied by the magnitude in each instance. Leah Wortham, *The Economics of Insurance Classification: The Sound of One Invisible Hand Clapping*, 47 OHIO ST. L.J. 835, 843 (1986).

¹⁴¹ EMMETT J. VAUGHAN & THERESE M. VAUGHAN, *FUNDAMENTALS OF RISK AND INSURANCE* 163 (11th ed. 2014).

¹⁴² See George L. Priest, *The Current Insurance Crisis and Modern Tort Law*, 96 YALE L.J. 1521, 1540 (1987) (“The insurer’s aggregation function derives from operation of the law of large numbers—the empirical phenomenon according to which the probability density function of average loss tends to become concentrated around the mean as the sample number increases. Applied to insurance, the law of large numbers means that as one increases the number of insured persons possessing independent and identically-valued risks, one increases the accuracy of prediction of expected loss for each individual.” (footnote omitted)). There is no advantage to aggregating highly correlated risks because those risks will not occur randomly and will push the predicted average loss for a pool toward the total loss for the pool. See *id.* (“As long as the risks of pool members are uncorrelated, that is, statistically independent, the insurer can accumulate small premiums from each insured and still have funds sufficient in any period to pay those losses that actually occur. In contrast, if risks were highly correlated, there would be no advantage to aggregating them. Thus, losses from nuclear war are uninsurable.” (footnote omitted)). For a detailed explanation of the law of large numbers, see VAUGHAN & VAUGHAN, *supra* note 141, at 36-40.

¹⁴³ Of course, adjustments are made to premiums to reflect the riskiness of each insured and reward the insured for risk-lowering activities. See *infra* Sections II.C, II.D.

¹⁴⁴ See VAUGHAN & VAUGHAN, *supra* note 141, at 41.

¹⁴⁵ See *id.* at 8.

¹⁴⁶ See *id.* at 45.

also benefits tort victims by providing compensation.¹⁴⁷ But liability insurance does much more than simply cover the losses of tort defendants and compensate those they injure. Liability insurance has a profound, but largely underappreciated, additional role in the tort system. Liability insurance actually drives the tort process. The availability of liability insurance determines who is sued, the nature of the legal claims made, the shape of settlement negotiations, and nearly all aspects of a tort case. Indeed, liability insurance can even influence the laws that establish a plaintiff's liability.¹⁴⁸ As Tom Baker and Peter Siegelman have observed, "little or nothing in Tort law makes sense except in the light of liability insurance."¹⁴⁹ Damages, the most important aspect of the case to a contingent-fee tort lawyer, are inextricably intertwined with liability insurance. Tort lawyers are unlikely to take cases where damages are not collectable, making liability insurance a de facto element of most tort claims.¹⁵⁰ Moreover, since payments made to satisfy tort claims rarely exceed policy limits, the amount of available liability insurance also functions as a cap on a defendant's tort liability.¹⁵¹ As a result, liability insurance is not just a vital component of the tort system; it is the driving force behind the tort system.¹⁵²

But the presence of insurance to cover a defendant's legal liabilities appears to create a conundrum. The tort system deters tortious conduct by forcing injurers to internalize the cost of the harm they cause. But if an injurer can simply transfer her liability to an insurer by paying a small premium, the tort system loses its ability to deter tortious conduct. In other words, someone who cheerfully relies on liability insurance

¹⁴⁷ See Baker & Siegelman, *supra* note 25, at 170 (noting that tort law is "centrally concerned with problems of compensation for victims"); see also Gary T. Schwartz, *The Ethics and the Economics of Tort Liability Insurance*, 75 CORNELL L. REV. 313, 328 (1990) (noting that liability insurance is not only consistent with the compensatory-justice norm of tort law, but actually serves to further that norm, particularly when a tort judgment exceeds the defendant's assets, and ensures that the victim is more fully compensated than he otherwise would have been in the absence of insurance).

¹⁴⁸ See Tom Baker, *Liability Insurance as Tort Regulation: Six Ways That Liability Insurance Shapes Tort Law in Action*, 12 CONN. INS. L.J. 1 (2005) [hereinafter Baker, *Liability Insurance as Tort Regulation*].

¹⁴⁹ See Baker & Siegelman, *supra* note 25, at 169.

¹⁵⁰ See Baker, *Liability Insurance as Tort Regulation*, *supra* note 148, at 4-5.

¹⁵¹ *Id.* at 7 ("Even tort litigation against wealthy individuals and large organizations has become, in all but the unusual case, an exercise in recovering money from liability insurance companies and only from insurance companies.").

¹⁵² See *id.* at 15 (analogizing the relationship of liability insurance to tort law to an invisible force of nature); see also Steven Shavell, *On the Social Function and Regulation of Liability Insurance*, 25 GENEVA PAPERS ON RISK & INS. 166, 166-67 (2000) (noting that indeed, liability insurance funds "over 90 per cent of tort-related payments in the United States").

when taking risks has no economic incentive to reduce their risky behavior.¹⁵³ This misalignment of incentives is a classic moral hazard problem. As it turns out, however, insurance is, in many instances (apart from foodborne safety), quite capable of managing moral hazard and controlling risky conduct.

B. *Insurance and the Problem of Moral Hazard*

Few discussions of insurance get very far without at least acknowledging the moral hazard problem. Put simply, moral hazard describes the dampening effect of insurance on someone's motivations to reduce risk.¹⁵⁴ Given the indemnification and risk-shifting aspects of liability insurance, it is not surprising that some might think that liability insurance would exacerbate the food safety problem. Liability insurance could shield a food supplier from the costs of its unsafe food practices, thereby creating a disincentive for a supplier to take greater care and thus increasing societal risk. This is indeed the view of leading food safety researchers.¹⁵⁵

Yet insurance is increasingly understood as much more than a victim-compensation and risk-spreading device. Insurance is also a way to mitigate risk through the use of information.¹⁵⁶ Insurance does not inherently decrease the uncertainty of the risk that individual insureds face or lessen the probability of the financial loss associated with risk.¹⁵⁷ Insurers can, however, use data and sophisticated actuarial analyses to make predictions about the nature of the risks faced by their insureds, structure coverage, and formulate strategies to minimize moral hazard. Information is the key to understanding insurance as a tool for mitigating societal risk. Insurers use claims data, supplemented by other information, to predict the cost of losses

¹⁵³ See Baker & Siegelman, *supra* note 25, at 169 (“[L]iability insurance would seem to sever the link between injurers’ behavior and its financial consequences, since the party that caused the injury no longer ends up paying for it.”).

¹⁵⁴ *Id.* at 169 n.3 (“[M]oral hazard is the tendency of insurance to diminish an insured’s incentives to take care that would reduce the risk being insured against. It arises because of a classic externality: the *costs* of taking care fall on the insured, but the *benefits* of care accrue to the party who will pay for any losses, namely the insurer.”). For the classic explanation of moral hazard, see Kenneth J. Arrow, *Uncertainty and the Welfare Economics of Medical Care*, 53 AMER. ECON. REV. 941 (1963). For an in-depth survey of the history of moral hazard, see Tom Baker, *On the Genealogy of Moral Hazard*, 75 TEX. L. REV. 237 (1996).

¹⁵⁵ See, e.g., BUZBY ET AL., *supra* note 1, at 10 (suggesting liability insurance “distort[s] incentives for firms to produce safer food”).

¹⁵⁶ Tom Baker & Jonathan Simon, *Embracing Risk*, in EMBRACING RISK, *supra* note 23, at 8 (referring to insurance as a risk-reducing technology).

¹⁵⁷ See VAUGHAN & VAUGHAN, *supra* note 141, at 40.

that their individual insureds will experience. Once these losses are controlled, overall risk is reduced.

But why would an insurer want to lower risk? To secure a competitive advantage. If an insurer can lower its premiums by lowering its risk of paying claims, it can underprice its competitors, thereby attracting more business.¹⁵⁸ Marketplace considerations, rather than altruism, drive insurers to reduce risk. Nevertheless, this arrangement can work to society's advantage. When an insurer's competitive goals are sufficiently aligned with society's interests in risk reduction, insurance can function as a socially beneficial safety regulator.¹⁵⁹ This is the insurance equivalent of Adam Smith's "invisible hand."¹⁶⁰ Insurers engage in the business of spreading risk for their own gain, but their actions can give rise to a collective social benefit. Now that it is clear *why* insurers are driven to reduce risks to lower premiums, it is important to understand *how* insurers lower risk and reduce moral hazard.

C. *Insurance and Risk Reduction*

Insurers use many tools to reduce risk,¹⁶¹ and the general consensus is that they work reasonably well.¹⁶² These tools include financial incentives such as underwriting, a process through which insurers screen and evaluate applicants to determine the degree of risk they pose.¹⁶³ Insurers can either reject the applicant outright as too risky¹⁶⁴ or agree to cover the applicant and set the premiums based on the applicant's level of risk.¹⁶⁵ Insurers also use experience rating, a pricing process through which premiums are set based on the insured's prior

¹⁵⁸ Ben-Shahar & Logue, *supra* note 17, at 201.

¹⁵⁹ *Id.* at 202.

¹⁶⁰ ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 345 (George Routledge & Sons 1900) (suggesting that individuals who pursue their own self-interest are led by an invisible hand to promote the public interest even though it was never their original intention to do so).

¹⁶¹ These tools have been described in detail elsewhere. See, e.g., Baker & Siegelman, *supra* note 25; Ben-Shahar & Logue, *supra* note 17; Tom Baker & Rick Swedloff, *Regulation by Liability Insurance: From Auto to Lawyers Professional Liability*, 60 UCLA L. REV. 1412 (2013).

¹⁶² See Baker & Siegelman, *supra* note 25, at 169-70 (noting that "insurance contracts contain numerous structural features designed to limit moral hazard, and the consensus is that these features seem to work reasonably well").

¹⁶³ See KENNETH S. ABRAHAM & DANIEL SCHWARCZ, INSURANCE LAW AND REGULATION 7 (6th ed. 2015).

¹⁶⁴ This also serves a gatekeeping function. See Tom Baker & Thomas O. Farrish, *Liability Insurance & the Regulation of Firearms*, in *SUING THE GUN INDUSTRY: A BATTLE AT THE CROSSROADS OF GUN CONTROL AND MASS TORTS* 294-95 (Timothy D. Lytton ed., 2008).

¹⁶⁵ See ABRAHAM & SCHWARCZ, *supra* note 163, at 7.

claims.¹⁶⁶ Insureds with prior claims will incur higher premiums than those without prior claims. Insurers can also impose other financial incentives incorporated into the insurance contract, such as coverage limits,¹⁶⁷ deductibles,¹⁶⁸ coinsurance,¹⁶⁹ and coverage exclusions,¹⁷⁰ which force the insured to share part of the loss with the insurer (or, in the case of an exclusion, the insured will bear the entire loss) as an incentive to prevent loss.¹⁷¹ In addition, insurers use other means of lowering risk. For example, insurers often develop and promote their own safety standards, compliance with which results in lower premiums and sometimes is even required as a prerequisite for coverage.¹⁷² Insurers also educate their insureds about the risks they face so that insureds can reduce the frequency or severity of claims.¹⁷³

When put into context, it is easy to see how these risk-reduction techniques lower societal risk. Homeowners insurance provides a good example. Insurers analyze bulk homeowners' claims data to develop information about the risks that generate claims by homeowners, as well as the magnitude of those claims. When this general risk information is paired with the information provided by an insured in her application for insurance and the insured's claims history, an insurer can use financial tools, such as risk-based premiums, to encourage the homeowner to reduce her risks. For example, an insurer will raise premiums for homeowners who have a pool, a trampoline, or any other attractive nuisance on their property.¹⁷⁴ The prospect of higher premiums also discourages homeowners from having these in

¹⁶⁶ *See id.*

¹⁶⁷ A coverage limit is a cap on the total amount of the cover (e.g., \$1,000,000) that still may be less than the total potential liability exposure of the insured. Baker & Swedloff, *supra* note 161, at 1420.

¹⁶⁸ A deductible is a threshold amount that an insured must cover before insurance will cover a claim (e.g., the first \$5,000 of liability). *Id.*

¹⁶⁹ Coinsurance is a percentage that an insured will be responsible for in addition to any insurance cover (e.g., 20%). *Id.*

¹⁷⁰ For example, insurers typically exclude coverage for losses resulting from expected risks or intentional actions. *See, e.g.,* Co-operative Ins. Cos. v. Woodward, 45 A.3d 89, 94 (Vt. 2012) ("Where an insured's tortious acts are intentional, a policy exclusion for intentional acts by 'an insured' generally bars coverage for claims made by any insured under the same policy." (quoting N. Sec. Ins. Co. v. Perron, 777 A.2d 151, 163 (Vt. 2001))). These contract provisions ensure that insureds bear the full cost of certain risks within their control and encourage greater care with respect to those risks. Baker & Swedloff, *supra* note 161, at 1420.

¹⁷¹ *See id.*; *see also* Ben-Shahar & Logue, *supra* note 17, at 208-09 (noting that while deductibles and copayments preserve an incentive by the insured to take care, that incentive is weaker than risk-based premiums).

¹⁷² *Id.* at 211.

¹⁷³ *Id.* at 210-11; Baker & Swedloff, *supra* note 161, at 1423.

¹⁷⁴ *See 8 Factors That Can Affect Your Homeowners Insurance Rates*, WELLS FARGO, <https://www.wellsfargo.com/financial-education/insurance-protection/eight-factors-homeowners-insurance-rates/> [<http://perma.cc/WPG5-X6BU>] (last visited Apr. 7, 2016).

the first place. Homeowners who remove trampolines from their yard benefit from a premium reduction, and the homeowner's neighbors benefit from the decrease in the risk of an injury to their children who might use the trampoline and injure themselves.

In theory, food safety liability insurance would work the same way. Insurers would use tort claims data to assess which risks generate losses and the size of those losses. Based on that data, insurers could use risk-based premiums, coverage exclusions, and other tools to control risk. For example, if a particularly risky food item generates a high number of foodborne-illness tort claims, an insurer could reduce the risks associated with that food item by increasing the premiums (or excluding coverage altogether) when restaurants serve that food item. This would encourage restaurants to stop serving that particular food item, which would benefit society by lowering its overall risk of foodborne illness. Indeed, the more modern, sophisticated understanding of the risk-reducing potential of insurance appears to undercut the traditionally expressed objection to liability insurance as a source of moral hazard in the food safety context.¹⁷⁵ Yet the distinctive nature of foodborne illness significantly inhibits the regulatory powers of liability insurance as a means to improve food safety.

D. Liability Insurance as an Effective Private Risk Regulator

While liability insurance has the capacity to function as an effective risk regulator, there is no guarantee that it will always do so.¹⁷⁶ In order for liability insurance to effectively regulate risk, certain conditions must be present. First, it is axiomatic that insurers must be able to employ these risk-management techniques in order to function as risk regulators. Insurance regulations that restrict or prohibit some of these techniques blunt insurers' ability to reduce moral hazard.¹⁷⁷ Second, it is also necessary that insureds be risk averse and

¹⁷⁵ See Ben-Shahar & Logue, *supra* note 17, at 199 (noting that insurance has traditionally been viewed "as antithetical to risk reduction"). For an example of the traditional view in the context of food safety, see BUZBY ET AL., *supra* note 1, at 9.

¹⁷⁶ See, e.g., Baker & Griffith, *supra* note 139, at 1808-10, 1817-22 (finding that insurers issuing directors' and officers' coverage do not monitor their insureds for loss prevention, thereby decreasing incentives for the insureds to avoid losses and increasing moral hazard).

¹⁷⁷ Of course, other concerns such as fairness can come into play when insurers act as private regulators unfettered by the constitutional and statutory limits imposed on government regulators. See Abraham, *Four Conceptions*, *supra* note 24, at 683-93.

have the capacity to control risk by exercising care. This means that insureds must be able to take precautions to avert harm to others.¹⁷⁸ If insureds cannot control their own risk, imposing these risk-reducing mechanisms on insureds simply will not work. Third, insurers must have the ability to observe their insureds' level of care so that they can price and structure the insurance contract to address each insured's level of risk.¹⁷⁹ Fourth, the insurer's incentives must be sufficiently aligned with those of society. Simply put, the insurer's competitive drive and quest for profits must steer its activities in a direction that reduces societal risk.¹⁸⁰ In other words, a liability insurer that can profitably operate without monitoring its insureds' behavior for risk will not be an effective risk regulator.¹⁸¹ Finally, there must be sufficient tort liability. If victims fail to file tort claims in sufficient numbers or if they consistently receive inadequate damages awards, the tort system will underdeter harm. Absent sufficient deterrence, liability insurance premiums will be lower than they would be under full deterrence; premiums will reflect the expected losses resulting from diminished tort liability rather than the risk insureds actually pose to society. Under such conditions, it may simply be cheaper for insureds to purchase liability insurance and exercise less care than for insureds to make reasonable efforts to reduce risk.¹⁸²

Thus, the effectiveness of liability insurance as a risk regulator depends heavily on context. In the context of foodborne illness, the problem is partly informational, partly based on cognitive biases of food suppliers,¹⁸³ and partly related to litigation difficulties. Consumers are beset with informational disadvantages that limit their capacity to identify risky food

¹⁷⁸ See Shavell, *supra* note 152, at 167.

¹⁷⁹ See Steven Shavell, *On Liability and Insurance*, 13 BELL J. ECON. 120, 127 (1982) (noting that if insurers cannot observe the prevention activities of individual insureds, then insurers cannot link premium levels and contract terms to those activities); Baker & Siegelman, *supra* note 25, at 174 n.9 ("When insurers can observe care and activity levels, there is no informational asymmetry, and the first-best solution—to require the efficient level of care and provide full insurance—is achievable by contract."). Even in the absence of insurer observation, sufficiently high cost-sharing levels could still provide insureds with an incentive, albeit a weakened incentive, to take care. Baker & Siegelman, *supra* note 25, at 13; see also Steven Shavell, *On Moral Hazard and Insurance*, 93 Q.J. ECON. 541, 541 (1979) (noting that incomplete coverage partially addresses the moral hazard problem).

¹⁸⁰ See Ben-Shahar & Logue, *supra* note 17, at 202.

¹⁸¹ See generally Baker & Griffith, *supra* note 139 (finding that directors' and officers' insurers do not monitor risk-reduction activities of their insureds, leading to increased moral hazard).

¹⁸² See Jan M. Ambrose et al., *The Economics of Liability Insurance*, in HANDBOOK OF INSURANCE 2D 320 (Georges Dionne ed., 2014); Patricia M. Danzon, *Liability and Liability Insurance for Medical Malpractice*, 4 J. HEALTH ECON. 309, 316 (1985).

¹⁸³ See *infra* Section III.B.

and hamper their ability to connect a foodborne illness to its source. Food suppliers are subject to cognitive biases that lead them to underestimate the risk they pose to consumers. These problems, in turn, constrain the deterrence capability of the tort system with respect to foodborne illnesses.

III. FOOD SAFETY, RISK, AND THE ECONOMICS OF INFORMATION

Food safety is driven by the economics of information.¹⁸⁴ In a hypothetical market where consumers have perfect information, they will know and appreciate the perils associated with food. In such a market, suppliers of unsafe food risk reputation loss, reduced market share, loss of revenue, and possible closure.¹⁸⁵ In theory, the threat of these market consequences would be sufficient to discipline rational food suppliers and ensure a high level of safety in the food they supply.¹⁸⁶ Unfortunately, this is not how the real market for food works. Food safety is a “credence” attribute of food.¹⁸⁷ This means that a consumer typically cannot judge whether a food item is safe when it is purchased or even after the food item is consumed.¹⁸⁸ This leads to moral hazard and adverse selection in the market for food,¹⁸⁹ both of which shift the risk of contaminated food from suppliers to consumers. In addition, the market for safe food is confounded by an additional factor. Food suppliers are

¹⁸⁴ The economics of information is a form of microeconomic theory that examines how information affects economic decisions. Important contributions to the economic analysis of information problems in markets include George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213 (1961); George A. Akerlof, *The Market for “Lemons”: Qualitative Uncertainty and Market Mechanism*, 84 Q.J. ECON. 488, 490-91 (1970); Michael Spence & Richard Zeckhauser, *Insurance, Information and Individual Action*, 61 AM. ECON. REV. 380 (1971); Joseph E. Stiglitz, *Incentives, Risk, and Information: Notes Towards a Theory of Hierarchy*, 6 BELL J. ECON. 552 (1975). For an overview of the economics of information, see generally Joseph E. Stiglitz, *The Contribution of the Economics of Information to Twentieth Century Economics*, 115 Q.J. ECON. 1441 (2000).

¹⁸⁵ See Cindy R. Alexander, *On the Nature of the Reputational Penalty for Corporate Crime: Evidence*, 42 J.L. & ECON. 489, 504-22 (1999) (using empirical data to assess the impact of reputational penalties); Jonathan M. Karpoff et al., *The Reputational Penalties for Environmental Violations: Empirical Evidence*, 48 J.L. & ECON. 653, 654 (2005) (“[A]llegations or charges that a firm violated environmental regulations correspond to economically meaningful and statistically significant losses in the firm’s share values.”).

¹⁸⁶ See Alexander, *supra* note 185, at 495-96 (noting that a reputational penalty resulting from unmet consumer expectations can increase the supplier’s cost of providing a low quality product); Diana Crumley, *Achieving Optimal Deterrence in Food Safety Regulation*, 31 REV. LITIG. 353, 372 (2012) (noting that the reputational penalty functions like a government-imposed sanction).

¹⁸⁷ See *infra* Section III.A.1.

¹⁸⁸ See *infra* Section III.A.1.

¹⁸⁹ See *infra* Section III.A.4.

subject to cognitive biases that lead them to underestimate the risk they pose to consumers.¹⁹⁰

A. *Information and Safe Food*

1. Food Safety and Credence Attributes

All goods and services, from used cars to clothes to professional services to food, possess a range of qualitative attributes that reflect the level of information available about those goods and services. Economists group these informational attributes into three categories, labeled “search,” “experience,” and “credence.”¹⁹¹ Search attributes can be directly observed by a consumer prior to purchase.¹⁹² For example, a consumer can look at, touch, and smell a cantaloupe to determine whether it is ripe and ready for purchase. Ripeness, as a search attribute, allows a consumer to assess the value of the cantaloupe and determine the fairness of its price—*with respect to that attribute*—prior to purchase.¹⁹³

A product’s experience attributes can only be known by experiencing the product, which invariably occurs only *after* purchase and use. A consumer cannot tell how a cantaloupe actually tastes just by looking at it or smelling it. While she can tell whether it is ripe, she cannot know if it is sweet or bland. Thus, she cannot assess its value to her—*based on taste*—until purchase and consumption.¹⁹⁴

For products that predominately feature search and experience attributes, consumers usually have enough information to drive market forces to ensure high quality. In the case of search attributes, consumers can immediately recognize a lower quality product. The likely result would be a decrease in sales of that product. In the case of a product with experience attributes, suppliers have an incentive to maintain quality standards, but only in cases of repeat purchases.¹⁹⁵ Under such circumstances, a

¹⁹⁰ See *infra* Section III.B.

¹⁹¹ See Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 J.L. & ECON. 67, 68 (1973); Phillip Nelson, *Information and Consumer Behavior*, 78 J. POL. ECON. 311, 315 (1970).

¹⁹² See Nelson, *supra* note 191, at 312.

¹⁹³ *Id.*

¹⁹⁴ *Id.* at 311-12.

¹⁹⁵ See Akerlof, *supra* note 184, at 490-91. Repeat purchases of goods with experience attributes can mitigate the information problem, but the efficacy of repeat purchases to assure quality “requires two necessary conditions: 1) consumers must learn the quality of the purchased item sufficiently quickly, and 2) they must renew their purchases sufficiently often.” Ariel Katz, *Pharmaceutical Lemons: Innovation and*

decrease in quality can lead to a bad reputation, a reduction of sales, and a decrease in revenues. The prospect of lower revenues can create the incentive to produce a higher quality product. A pair of socks, a pen, a laptop computer, a cell phone, and a lawnmower are all examples of products in which search and experience attributes dominate. Most everything a consumer might want to know about these products can be determined either before purchase or after use.

Credence attributes, however, are different from search and experience attributes in one fundamental way. Credence attributes are difficult or impossible for a consumer to evaluate even *after* experiencing or using the product.¹⁹⁶ Food safety is a credence attribute of food for two reasons: (1) the information asymmetry between the food suppliers and consumers and (2) the enigmatic nature of foodborne illness. Thus, a consumer cannot determine whether a food item is free from pathogenic contamination prior to purchase and often cannot connect ensuing illness back to a specific food item.

2. Information Asymmetry

When I was 16 years old, I worked as a short-order cook in a family-style restaurant. One morning, when retrieving a dozen eggs from the walk-in refrigerator, I dropped the eggs just out of sight of the customers. Naturally, the eggs broke, spreading yolks and whites across the dirty restaurant floor. When I began to scoop the eggs up to discard them, a manager stopped me. "Pick out the shells and use them for scrambled eggs," he said. I am embarrassed to say that I complied and cooked the dirty eggs. Yet no customers ever complained. If the eggs sickened anyone, they never told us. The restaurant saved a couple of bucks by using the dirty eggs, and no one was the wiser. This nauseating incident nicely illustrates the concept of asymmetric information in the marketplace for food. The manager and I had more information about the eggs than our customers. We knew the eggs had been dropped on the filthy floor. In the absence of complete information, the customers happily consumed their dirty scrambled eggs and then paid their check.

Informational asymmetry is a fundamental characteristic of the market for food. Consumers simply have less information

Regulation in the Drug Industry, 14 MICH. TELECOMM. & TECH. L. REV. 1, 19 (2007) (citing JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 112 (1988)).

¹⁹⁶ See Darby & Karni, *supra* note 191, at 68-69 ("Credence qualities are those which, although worthwhile, cannot be evaluated in normal use.").

about the safety of the food they buy than the suppliers who put that food on the market.¹⁹⁷ As illustrated by the example of the dirty scrambled eggs, this problem is particularly acute with respect to food. Any time food is grown, touched, processed, prepared, or otherwise handled for us by someone out of our sight, there will be informational asymmetry. While this may not be a significant problem when the person handling our food is familiar and trustworthy (i.e., a family member or friend), our modern food system exacerbates the asymmetric information problem.

Our food supply chain has become increasingly complex. The declining number of family farms,¹⁹⁸ the increasing number of industrial farms,¹⁹⁹ and the increasing interconnectedness of the global food system all tend to promote the use of highly complicated supply lines that are difficult to trace.²⁰⁰ Add to this mix a significant increase in the consumption of meals prepared outside of the home,²⁰¹ and the result is a substantial information disconnect between consumers and the food they consume. Consumers often do not know who supplied their food (other than the entity at the end of the food chain, such as a restaurant or supermarket), how their food was handled (whether it was properly stored or refrigerated, whether it was exposed to rodents, insects, or other vermin), or even what ingredients have been added to it. This puts consumers at a significant disadvantage with respect to judging the quality of food.²⁰²

On the other hand, suppliers have significantly more knowledge about the food product they are selling. While a supplier might not know for sure if its food products are

¹⁹⁷ S. Andrew Starbird, *Moral Hazard, Inspection Policy, and Food Safety*, 87 AMER. J. AGRIC. ECON. 15, 15 (2005).

¹⁹⁸ Roberto A. Ferdman, *The Decline of the Small American Family Farm in One Chart*, WASH. POST (Sept. 16, 2014), <http://www.washingtonpost.com/news/wonk/blog/wp/2014/09/16/the-decline-of-the-small-american-family-farm-in-one-chart/> [http://perma.cc/22J7-NAMM] (noting that the number of farms in the country has fallen by roughly four million since 1935).

¹⁹⁹ *Factory Farms Continue to Dominate U.S. Livestock Industry*, FOOD & WATER WATCH (May 27, 2015), <http://www.foodandwaterwatch.org/pressreleases/factory-farms-continue-to-dominate-u-s-livestock-industry/> [http://perma.cc/KXB5-JD8Q] (detailing growth of industrial farms).

²⁰⁰ Susan A. Schneider, *Notes on Food Law: An Overview of the Food Safety Modernization Act*, 2011 ARK. L. NOTES 39, 44 (2011).

²⁰¹ Ashley Arthur, *Combating Obesity: Our Country's Need for a National Standard to Replace the Growing Patchwork of Local Menu Labeling Laws*, 7 IND. HEALTH L. REV. 305, 308 (2010) (noting that "Americans are [now] eating out at a rate twice that in the 1970s").

²⁰² John M. Antle, *Efficient Food Safety Regulation in the Food Manufacturing Sector*, 78 AM. J. AGRIC. ECON. 1242, 1243 (1996) ("When information about product quality before purchase is imperfect, consumers are put in the position of buying a product whose quality is uncertain.").

contaminated with *E. coli*, the supplier will know, for example, what it did (or did not do) with the food (e.g., how the food was handled, who handled the food, what was added to the food, how the food was packaged, how the food was stored, or whether it was properly tested).²⁰³ But the information imbalance between supplier and consumer is not the only information problem. The consequences of this informational asymmetry are amplified by the special informational difficulties associated with foodborne illness.

3. The Enigmatic Nature of Foodborne Illness

There are more than 250 different identifiable enteric foodborne diseases, most of which are caused by a variety of bacteria, viruses, and parasites.²⁰⁴ Since each of these diseases has different symptoms, there is not one set of readily identifiable indicators of foodborne illness.²⁰⁵ In addition, different foodborne illnesses have drastically different incubation periods. For some, symptoms can develop as quickly as one hour after consumption of contaminated food, as with a *Staph* infection.²⁰⁶ *Campylobacter*

²⁰³ For example, in 2008 and 2009, the Peanut Corporation of America shipped peanut butter contaminated with *Salmonella Typhimurium*. The results were devastating. Over 700 people were known to have been sickened, with a quarter of them hospitalized. Nine people died. See *Multistate Outbreak of Salmonella Typhimurium Infections Linked to Peanut Butter, 2008-2009 (FINAL UPDATE)*, CTRS. FOR DISEASE CONTROL & PREVENTION (May 11, 2009), <http://www.cdc.gov/salmonella/2009/peanut-butter-2008-2009.html> [<http://perma.cc/Y2PC-9NZ7>]. The company did not know for sure that its peanut butter was contaminated, but it did ship peanut butter before receiving test results for *Salmonella*. When told that peanut butter shipments would be delayed because *Salmonella* test results were not yet available, Stewart Parnell, the company's president, wrote in an email, "Shit, just ship it. I cannot afford to loose (sic) another customer." Maryn McKenna, "*Sh*t, Just Ship It*": *Felony Prosecution for Salmonella-Peanut Executives*, WIRED (Feb. 4, 2013, 12:30 PM), <http://www.wired.com/2013/02/prosecution-pca/> [<http://perma.cc/PY9N-UVBH>].

²⁰⁴ *Foodborne Germs and Illnesses*, CTRS. FOR DISEASE CONTROL & PREVENTION (Sept. 24, 2015), <http://www.cdc.gov/foodsafety/foodborne-germs.html> [<http://perma.cc/JS8K-ESDX>]. While more than 250 pathogens and toxins are known to cause foodborne illness, see *Foodborne Illness and Outbreak*, *supra* note 53, the overwhelming majority of known foodborne illnesses (about 91%) in the United States are caused by five pathogens: *Salmonella*, *Norovirus*, *Clostridium perfringens*, *Campylobacter*, and *Staphylococcus aureus*. *Estimates of Foodborne Illness*, *supra* note 2; see also *CDC 2011 Estimates: Findings*, CTRS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html> [<http://perma.cc/5MJA-Q9H8>] (last updated Jan. 8, 2014); MICHAEL B. BATZ ET AL., UNIV. OF FLA. EMERGING PATHOGENS INST., *RANKING THE RISKS: THE 10 PATHOGEN FOOD-COMBINATIONS WITH THE GREATEST BURDEN ON PUBLIC HEALTH 7-8* (2011), <http://www.rwjf.org/content/dam/farm/reports/reports/2011/rwjf70101> [<http://perma.cc/TU3S-DE9S>].

²⁰⁵ *Foodborne Germs and Illnesses*, *supra* note 204. In the case of foodborne illness, though, the microbe or toxin enters the body through the gastrointestinal tract. *Id.* Thus, first symptoms often appear in the gastrointestinal tract, causing nausea, vomiting, abdominal cramps, and diarrhea. *Id.*

²⁰⁶ See *Understanding Food Poisoning—Symptoms*, WEBMD, <http://www.webmd.com/food-recipes/food-poisoning/understanding-food-poisoning-symptoms> [<http://perma.cc/SFU2-KUBD>] (last visited July 8, 2016).

can take up to 10 days to show symptoms, but it can also show symptoms in a few days.²⁰⁷ A parasitic infection, such as *Giardia*, can take weeks to show symptoms.²⁰⁸

The often significant delay in the onset of symptoms makes it very difficult, and sometimes impossible, to connect the infection with a food source.²⁰⁹ Moreover, the evidence that can definitively connect a food item to an illness—the leftovers (if any)—are often long gone by the time symptoms appear. Finally, many microbes associated with foodborne illnesses are also spread through nonfood means. For example, *E. coli* is commonly spread through food, drinking water, swimming water, and through toddler-to-toddler contact at day care centers.²¹⁰ Thus, it may be impossible to know for sure that a particular *E. coli* infection is a foodborne disease.²¹¹

While asymmetric information and the special information problems associated with foodborne illnesses are themselves troubling, these problems lead to two additional difficulties in the safe-food market: moral hazard and adverse selection.²¹² Both lower economic incentives to produce safe food.

²⁰⁷ See *id.*

²⁰⁸ See *Giardiasis—Topic Overview*, WEBMD, <http://www.webmd.com/digestive-disorders/tc/giardiasis-topic-overview> [<http://perma.cc/7GKC-WMGH>] (last visited Apr. 7, 2016) (noting that *Giardia* “usually takes 7 to 10 days for the infection to develop, but it can take from 3 to 25 days or longer”).

²⁰⁹ *Overview of Attribution of Foodborne Illness*, CTNS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/foodborneburden/attribution/overview.html> [<http://perma.cc/36EC-52T6>] (last visited Apr. 7, 2016) (“For the vast majority of foodborne illnesses, we do not know what food is responsible for someone getting sick.”). The sources of enteric foodborne illness, typically bacteria and viruses, cannot be detected unless a food product shows visible signs of deterioration. Also, since symptoms of foodborne illness can be as commonplace as diarrhea or as life threatening as organ failure, *Be Food Safe: Protect Yourself from Food Poisoning*, CTNS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/features/befoodsafe/> [<http://perma.cc/F8YF-A7K3>] (last visited July 8, 2016), and can vary dramatically in terms of how soon symptoms begin after eating or drinking the contaminated food, the length of illness, and when and how well a person recovers, *Diseases & Topics: Food Poisoning & Food-Borne Illnesses*, N.C. DEP’T OF HEALTH & HUMAN SERVS., <http://epi.publichealth.nc.gov/cd/diseases/food.html> [<http://perma.cc/B7PR-UBNL>] (last visited Apr. 7, 2016), it may be difficult to know with any degree of certainty that one is even suffering from a foodborne illness.

²¹⁰ *Foodborne Germs and Illnesses*, *supra* note 204.

²¹¹ See, e.g., Emily Sinovic, *Family Questions Goat as Source of E. coli in Girl’s Death*, KATU NEWS (Oct. 15, 2014), www.katu.com/news/local/Family-questions-goat-as-source-of-e-coli-in-serena-proffitts-death-279382002.html [<http://perma.cc/HX32-FTQ8>] (citing state public health officials as saying “that it is often hard to know with 100 percent accuracy the source of *E. coli*”).

²¹² Indeed, the market for insurance is also plagued by moral hazard and adverse selection problems. See ABRAHAM & SCHWARZ, *supra* note 163, at 6-7.

4. Moral Hazard and Adverse Selection

Moral hazard occurs when one party is more likely to take risks because the costs of those risks will be borne, in whole or in part, by another party. Although often discussed in the context of insurance, moral hazard is not simply an insurance concept.²¹³ Moral hazard affects food safety because food has credence attributes. When a consumer cannot link a foodborne illness to a particular food product (or when a consumer may not even discover she has a foodborne illness),²¹⁴ an incentive exists for a food supplier to shirk on food safety. This is especially true when adhering to safe food practices is costly and the costs of the unsafe food will not (or are unlikely to) be borne by the supplier. For example, when a restaurant supplier ships meat that has fallen on the floor,²¹⁵ a supermarket grinds rotten pork and uses it for sausage,²¹⁶ a meat processor sells condemned and diseased cow carcasses,²¹⁷ a peanut processor ships peanut butter without proper testing,²¹⁸ or a sick restaurant worker reports to work and handles food,²¹⁹ the food supplier (1) has more information about the safety of the food than consumers and (2) shifts the risk of the food (i.e., that it will cause a foodborne illness) to consumers. This is the essence of moral hazard. The results are negative externalities—indirect costs borne by the consumer (and others) not represented by the market price of the unsafe food. Since a food supplier is

²¹³ See *supra* Section II.B; see Baker, *supra* note 154.

²¹⁴ See *Foodborne Illness: What Consumers Need to Know*, http://www.fsis.usda.gov/wps/portal/ffsis/topics/food-safety-education/get-answers/food-safety-fact-sheet/s/foodborne-illness-and-disease/foodborne-illness-what-consumers-need-to-know/ct_index [<http://perma.cc/2254-ZTWP>] (last visited Apr. 7, 2016) (noting that foodborne illness often presents flu-like symptoms, preventing many people from recognizing that their illness is caused by pathogens in food).

²¹⁵ See Adam Jourdan & Lisa Baertlein, *Yum, McDonald's Apologize as New China Food Scandal Hits*, REUTERS (July 21, 2014, 5:36 PM), <http://www.reuters.com/article/2014/07/21/us-yum-brands-food-safety-idUSKBN0FQ01P20140721> [<http://perma.cc/5EAT-9EB8>] (describing a TV report that showed workers at meat supplier picking up and using meat from a factory floor).

²¹⁶ See Tracy Dreispul, *Circumventing Sullivan: An Argument Against Awarding Punitive Damages for Newsgathering Torts*, 103 DICK. L. REV. 59, 60 (1998) (describing unsafe food practices by a supermarket chain).

²¹⁷ See Laura Ly, *Slaughterhouse Staff Indicted over Meat from Cows with Cancer*, CNN (Aug. 19, 2014, 8:17 AM), http://www.cnn.com/2014/08/19/us/california-bad-meat-charges/index.html?hpt=hp_t2 [<http://perma.cc/NB6S-269Y>].

²¹⁸ See *supra* note 203 and accompanying text.

²¹⁹ See, e.g., C.A. Pinkham, *Your Waiters Are Violently Sick While Serving You Food*, KITCHENETTE (July 23, 2014, 11:00 AM), <http://kitchenette.jezebel.com/your-waiters-are-violently-sick-while-serving-you-food-1609379121> [<http://perma.cc/99WK-KLVD>] (providing examples of food workers going to work while ill); see also Victor, *supra* note 122 (foodborne illness outbreaks that sickened hundreds of restaurant customers linked to sick restaurant employees).

motivated at least in part by profits, and since safe food is more costly to produce, suppliers have a diminished incentive to produce safe food.²²⁰ Thus, moral hazard contributes to the food safety problem.

The resulting negative externalities associated with food safety mean two things. First, there will be excessive levels of unsafe food because the true cost of the food will not be reflected in its market price, and second, expenditures by suppliers to make food safe will be too low.²²¹ The socially efficient level of safe-food production will therefore be lower than what would result in a market not plagued by negative externalities.²²² This is a classic market failure.²²³ But even if a food supplier is driven by ethical standards to keep her food as safe as possible, there is another, perhaps more powerful economic factor creating pressure to shirk on food safety measures: adverse selection.

Adverse selection is the second problem resulting from the information gap that occurs in the context of food safety. When consumers cannot observe a supplier's safety investments, and therefore cannot make a judgment about the riskiness of its products, consumers will only have information about average rather than brand-specific risk levels for these goods. Economist George Akerlof described this scenario as a "market for lemons."²²⁴ And although Akerlof had low-quality automobiles in mind, rather than food products, his analysis carries over into the market for food safety.

In a market for lemons, asymmetric information about product quality can lead to market failure—a "race to the bottom" in terms of quality. When consumers cannot distinguish between the sellers of high-quality and low-quality goods, consumers

²²⁰ It is important to note that there is also a moral dimension to the moral hazard problem. See Kenneth J. Arrow, *Uncertainty and the Welfare Economics of Medical Care*, 53 AM. ECON. REV. 941 (1963). Arrow notes the moral dimension to moral hazard in his reply to Professor Pauly's comment on Arrow's article. His point is simple: people do not always respond to the external incentive provided by a subsidized price in an economically rational manner. Instead, internalized moral principles also drive individual behavior. See Kenneth J. Arrow, *The Economics of Moral Hazard: Further Comment*, 58 AM. ECON. REV. 537 (1968). Thus, some food suppliers will strive to produce safe food regardless of the cost. However, as noted in Section III.A.4, *infra*, those who supply costly, safe food will face market pressures to shirk on safety. For an in-depth survey of the history of moral hazard, including its moral dimensions, see generally Baker, *supra* note 154.

²²¹ Spencer Henson & Bruce Traill, *The Demand for Food Safety: Market Imperfections and the Role of Government*, 18 FOOD POLY 152, 157 (1993).

²²² See JOSEPH E. STIGLITZ, *ECONOMICS OF THE PUBLIC SECTOR* 215-17 (1986) (noting that markets affected by negative externalities result in excessive production of the harmful commodity and insufficient expenditures to control the negative externality).

²²³ See *id.* at 80-81 (listing externalities as among conditions that constitute market failure).

²²⁴ See Akerlof, *supra* note 184, at 490-91.

discount all quality claims, assume an average quality, and are willing to pay only the price for goods of average quality. That is, they will unwittingly select adversely against producers of higher quality products. Sellers who offer goods at a level of quality exceeding the average, and that reflect a price exceeding the average, will thus be driven out of the market. Further, low prices may discourage potential sellers who want to offer a quality product from entering that market in the first place. The result is market failure: a market comprised of products of a lower quality than would occur with symmetric information.²²⁵

In the context of food safety, Akerlof's concept of a market for lemons can be illustrated by a simple example. Assume that suppliers of cantaloupes have better information about the safety of the cantaloupes than consumers, and further assume that those suppliers can be sorted into three categories: (1) cantaloupe suppliers that implement costly food safety practices and supply safe cantaloupes (for example, with a very low risk of *Listeria*²²⁶) at the highest price (safest category); (2) cantaloupe suppliers that implement less costly food safety practices and supply less safe cantaloupes (for example, with a moderate risk of *Listeria*) at an average price (average category); and (3) cantaloupe suppliers that implement no food safety practices and supply unsafe cantaloupes (for example, with a high risk of *Listeria*) at the lowest price (unsafe category). Since the category of any particular supplier (safest, average, or unsafe) cannot be determined by a consumer *ex ante* because a particular supplier's safety practices cannot be observed and consumers cannot test for *Listeria* prior to purchase, buyers will only pay for cantaloupes at a price that reflects the average safety offered from all suppliers of cantaloupes. Moreover, because the safest cantaloupes are costlier to produce than average or unsafe cantaloupes, the average market price will be too low to support the suppliers of

²²⁵ *Id.* But see Katz, *supra* note 195, at 15 (citing JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 109 (1988)) (noting that in real life, markets typically do not disappear completely, but instead may simply "shrink as the frequency of transactions decreases in comparison to what would occur if the available information were perfect or if 'anti-lemon devices,' mechanisms to credibly assure the quality of products, were available").

²²⁶ A 2011 outbreak of *Listeria* associated with cantaloupes infected 147 people and killed 33. See *Multistate Outbreak of Listeriosis Linked to Whole Cantaloupes from Jensen Farms, Colorado*, CTFS. FOR DISEASE CONTROL & PREVENTION (Aug. 27, 2012) [hereinafter *Multistate Outbreak of Listeriosis*], <http://www.cdc.gov/listeria/outbreaks/cantaloupes-jensen-farms/082712/index.html> [<https://perma.cc/C2UE-NT9C>]. The outbreak was linked to poor sanitation practices and inappropriate safety measures at the farm where the cantaloupes were grown. See *id.*

the safest cantaloupes. These suppliers will be forced to either exit the market or cut back on safety. In essence, bad cantaloupes drive good cantaloupes out of the market.²²⁷

B. Cognitive Biases

The information problems associated with safe food and the resulting moral hazard and adverse selection explain only part of the reason why food safety risk is a particularly difficult problem. Behavioral economics add another layer of complication: food suppliers may underestimate the risk created by the food they provide. Cognitive biases affect the way in which decision-makers process information about risks. As a result, scholars have increasingly focused on cognitive biases and how those biases result in poor decisionmaking by individuals. Much of this work, however, contains an implicit assumption: business actors are rational, profit-maximizing entities, sometimes even exploiting the behavioral biases of consumers.²²⁸ Thus, behavioral economics has largely focused on how cognitive biases affect consumer decisionmaking.²²⁹ The cognitive biases of food *suppliers* have not received substantial attention from academics or regulators and have only recently been addressed in the behavioral economics literature.²³⁰ Cognitive biases are nonetheless an important part of the food safety problem since cognitive biases could cause food suppliers to underestimate the risk of their food handling practices. One cognitive bias that is especially relevant to food safety—though certainly not the only one—is optimism bias.

Optimism bias causes individuals to underestimate the likelihood of risk and overestimate their ability to control risk.²³¹

²²⁷ These are characteristics similar to those described by Gresham's Law: the bad drives out the good. See Arthur J. Rolnick & Warren E. Weber, *Gresham's Law or Gresham's Fallacy?*, 94 J. POL. ECON. 185, 185 (1986). Although Gresham's Law applies more specifically to exchange rates, an analogy to food can be made. See Antle, *supra* note 202, at 1244 (applying Gresham's Law to the market for safe food).

²²⁸ Mark Armstrong & Steffen Huck, *Behavioral Economics as Applied to Firms: A Primer*, 6 COMPETITION POL'Y INT'L 3, 4 (2010).

²²⁹ See, e.g., Cass R. Sunstein, *Nudges vs. Shoves*, 127 HARV. L. REV. F. 210, 210-11 (2014); Oren Bar-Gill, *The Behavioral Economics of Consumer Contracts*, 92 MINN. L. REV. 749 (2008) (arguing for increased regulation in credit card markets).

²³⁰ See, e.g., Diogo Thimoteo da Cunha et al., *The Existence of Optimistic Bias About Foodborne Disease by Food Handlers and Its Association with Training Participation and Food Safety Performance*, 75 FOOD RES. INT'L 27 (2015); Diogo Thimoteo da Cunha et al., *He Is Worse Than I Am: The Positive Outlook of Food Handlers About Foodborne Disease*, 35 FOOD QUALITY & PREFERENCE 95 (2014) [hereinafter *He Is Worse Than I Am*].

²³¹ See T. SHAROT, *THE OPTIMISM BIAS: A TOUR OF THE IRRATIONALLY POSITIVE BRAIN* xv (2011) (defining optimism bias as "the inclination to overestimate the likelihood of encountering positive events in the future and to underestimate the

Two aspects of optimism bias are particularly relevant to food safety. First, people generally believe that they are less likely than most other people to experience adverse events, such as health problems, accidents, and personal tragedy.²³² Second, people have a tendency toward a self-serving bias. In other words, they tend to construe ambiguous information in an advantageous and self-serving way. This leads to overconfidence in their predictions.²³³ Thus, people overwhelmingly think that they are smarter, more ethical, more productive, and even less susceptible to optimism biases than other people.²³⁴ Self-serving bias can even result in feelings of invulnerability.²³⁵

Researchers have evaluated optimism bias in the context of food safety practices in the home.²³⁶ For example, people generally believe that their risk of food poisoning is less than that of the average person, that they are in control of microbial food hazards when they prepare food themselves,²³⁷ and that food prepared by others is much more hazardous.²³⁸ And unsurprisingly, there is emerging evidence that commercial food handlers suffer the same bias: they believe they are less likely than their peers to spread a foodborne disease to consumers.²³⁹ This can lead food handlers to abandon

likelihood of experiencing negative events”); Donald C. Langevoort, *Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (and Cause Other Social Harms)*, 146 U. PA. L. REV. 101, 139 (1997) (citing MAX H. BAZERMAN, JUDGMENT IN MANAGERIAL DECISION MAKING 37-39 (3d ed. 1994)) (describing corporations’ inflated sense of their ability to control risks); Neil D. Weinstein, *Reducing Unrealistic Optimism About Illness Susceptibility*, 2 HEALTH PSYCHOL. 11, 11-12 (1983); Neil D. Weinstein & William M. Klein, *Resistance of Personal Risk Perceptions to Debiasing Interventions*, 14 HEALTH PSYCHOL. 132, 132 (1995); David M. DeJoy, *The Optimism Bias and Traffic Accident Risk Perception*, 21 ACCIDENT ANALYSIS & PREVENTION 333, 335-37 (1989).

²³² Sean Hannon Williams, *Sticky Expectations: Responses to Persistent Over-Optimism in Marriage, Employment Contracts, and Credit Card Use*, 84 NOTRE DAME L. REV. 733, 737, 744 (2009); Christine Jolls & Cass R. Sunstein, *Debiasing Through Law*, 35 J. LEGAL STUD. 199, 204 (2006). As a result of selective interpretation of information, people systematically underestimate both their relative level of risk and their absolute level of risk. Jolls & Sunstein, *supra*, at 204-05.

²³³ Williams, *supra* note 232, at 742.

²³⁴ *Id.* at 742-45.

²³⁵ See Frank P. McKenna, *It Won’t Happen to Me: Unrealistic Optimism or Illusion of Control?*, 84 BRIT. J. PSYCHOL. 39, 43-44 (1993).

²³⁶ See, e.g., Susan Miles & Victoria Scaife, *Optimistic Bias and Food*, 16 NUTRITION RES. REVS. 3, 3 (2003).

²³⁷ Susan Miles et al., *Public Perceptions About Microbiological Hazards in Food*, 101 BRIT. FOOD J. 744 (1999).

²³⁸ See Lynn J. Frewer et al., *The Interrelationship Between Perceived Knowledge, Control and Risk Associated with a Range of Food-Related Hazards Targeted at the Individual, Other People and Society*, 14 J. FOOD SAFETY 19 (1994).

²³⁹ *He Is Worse Than I Am*, *supra* note 230.

protective attitudes and practices related to food safety, thereby increasing the risk of foodborne illnesses among consumers.²⁴⁰

The difficulty with optimism bias is that while it is widely recognized, it is very hard to counteract.²⁴¹ For example, simply providing education and training related to risks is unlikely to work, because highlighting risk factors may not alter an individual's optimistic perception of that risk.²⁴² Indeed, providing information about risk can sometimes have the opposite effect—it can make matters worse by increasing an individual's optimism bias.²⁴³ As a result, people with optimism bias are less likely to be responsive to education.²⁴⁴ The implications for food safety are quite unsettling: food safety training efforts may not make food suppliers any less susceptible to optimism bias and could even result in less safe food.

IV. FOOD SAFETY, TORT LIABILITY, AND MONITORING RISK

Given that food safety is a credence attribute of food, foodborne illnesses are extremely difficult to connect to a source, and food suppliers are subject to cognitive biases that alter their perception of risk, it should come as no surprise that litigation rates for foodborne illnesses are low, resulting in an underdeterrence problem. What is surprising, however, is the severity of this underdeterrence problem. Food suppliers who injure their customers are rarely brought to account for the harm they cause.

²⁴⁰ *Id.*

²⁴¹ See Barbara Luppi & Francesco Parisi, *Beyond Liability: Correcting Optimism Bias Through Tort Law*, 35 QUEEN'S L.J. 47, 65 (2009) (noting that "evidence suggests that debiasing strategies that use risk education and information are costly and only partially effective"); Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 N.Y.U. L. REV. 630, 657 (1999) (noting that "optimistic bias is an indiscriminate and indefatigable cognitive feature"); Weinstein & Klein, *supra* note 231, at 138 (presenting four empirical studies on the viability of debiasing optimism bias and finding weak and inconsistent effects).

²⁴² Tali Sharot, *The Optimism Bias*, 21 CURRENT BIOLOGY R941, R943 (2011) (noting that "optimism bias is maintained in the face of disconfirming evidence" about health risks); Patrick Carroll et al., *Forsaking Optimism*, 10 REV. GEN. PSYCHOL. 56, 59 (2006) ("People are less likely to forsake optimism when they perceive that they can control either the outcome or its consequences."); Weinstein & Klein, *supra* note 231.

²⁴³ Miles & Scaife, *supra* note 236, at 16 ("Merely pointing out risk factors can provide new opportunities for biased interpretation and increases in optimistic bias.").

²⁴⁴ Elizabeth C. Redmond & Christopher J. Griffith, *Consumer Perceptions of Food Safety Risk, Control and Responsibility*, 43 APPETITE 309, 312 (2004). *But see* Jolls & Sunstein, *supra* note 232, at 209-11, 230 (suggesting that successful debiasing strategies in response to optimism bias should take other more complex forms, such as using an availability heuristic to increase an individual's estimates of risk). In the food safety context, this might be accomplished by exposing the individual to a specific instance of risk, or by framing risk-reducing precautions in terms of losses rather than gains. *See* Jolls & Sunstein, *supra* note 232, at 209-11, 230.

A. *Foodborne Illness and Underdeterrence*

1. Low Litigation Rates

There are no national figures available that neatly set out the litigation rate for tort claims arising from foodborne illnesses, but all the available evidence leads to the same conclusion: the litigation rate is extremely low. In the first and only rigorous study of its kind, Jean Buzby and Paul Frenzen, USDA researchers, estimated that the litigation rate for all foodborne illness cases could be as high as 1 claim brought per every 220,000 cases of foodborne illness or as low as 1 claim brought per every 1.1 million cases of foodborne illness.²⁴⁵ Since the data used for their study did not include confidential settlement information, Buzby and Frenzen's figures likely underestimate the actual litigation rate. But even if the actual litigation rate is much higher than estimated by Buzby and Frenzen—even 1,000 times higher²⁴⁶—the litigation rate is still

²⁴⁵ Jean C. Buzby & Paul D. Frenzen, *Food Safety and Product Liability*, 24 FOOD POL'Y 637, 647 (1999). The range of the estimated number of lawsuits per 100,000 cases of foodborne illness is 0.09 to 0.45. *Id.* at 642. This is a litigation rate of .00009% to .00045%, or 1 case brought per every 220,000 to 1,100,000 cases of foodborne illness. While empirical studies of food safety litigation are rare, there is, however, one study that appears to contradict Buzby and Frenzen's finding on the impact of food safety litigation. In a 2008 study, Maria Loureiro concluded that states employing strict liability regimes that allow punitive damages enjoy fewer foodborne illness incidents than states with strict liability regimes that do not allow punitive damages. *See Loureiro, supra* note 115, at 210-11. The conclusions of the study, however, are tempered by significant data limitations. First, the study excluded all incidents in which a foodborne illness could not be linked to a food product. *Id.* at 205, 206. Since most foodborne illnesses are never linked to a source, most foodborne illnesses were excluded from the study. Second, Loureiro's data does not identify the point along the food chain where the food safety lapses occurred. *Id.* at 206. Given that much of our food travels across state lines and that out-of-state food suppliers are subject to the same risk of litigation as in-state suppliers, it is unclear where (i.e., in which states) the deterrent effects of the punitive damages laws would be felt. Although Loureiro acknowledges these data limitations, she proceeds on the assumption that such limitations do "not introduce any systematic significant bias," although she concedes that she has no way to test this assumption. *Id.* at 205 & n.2. Perhaps the most significant problem with Loureiro's study, however, is its lack of litigation or punitive damages data. The study provides no evidence as to the frequency or amount of punitive damages awards in any foodborne illness cases. Indeed, Loureiro fails to identify even a single foodborne illness case in which punitive damages were awarded. As a result, the study's claimed link between punitive damages and improved food safety is difficult to evaluate.

²⁴⁶ In other words, that there are 999 confidential settlements for every case identified by Buzby and Frenzen is an overly generous and highly unlikely assumption. Although the conventional wisdom is that 95% of cases settle, empirical evidence suggests that the figure is lower for all cases, although only somewhat lower for tort cases. *See Theodore Eisenberg & Charlotte Lanvers, What Is the Settlement Rate and Why Should We Care?*, 6 J. EMPIRICAL LEGAL STUD. 111, 122 (2009) (noting studies that report settlement rates of about 70% to 80% in tort cases); *see also id.* at 130 tbl.3 (finding tort case settlement rates of 87.2% and 63.8% in two federal district courts

incredibly low, less than half of one percent.²⁴⁷ But this is not the only evidence of a very low litigation rate.

Even in circumstances involving the best-case litigation scenario—an outbreak in which victims can be positively linked to a foodborne pathogen and its source—evidence suggests that few victims file suit. Buzby and Frenzen cite an example of food poisoning cases involving *V. vulnificus*, a toxic marine bacterium associated with the consumption of raw Gulf oysters.²⁴⁸ Between 1988 and 1997, there were an average of 22 foodborne cases of *V. vulnificus* per year.²⁴⁹ These cases are fairly easy to trace. The incubation period for *V. vulnificus* is about 18 hours, with death following rapidly in about 50% of the cases, typically in about two days after hospitalization.²⁵⁰ Since the oyster industry is small and oysters bagged and shipped for sale are tagged—identifying the harvester and harvest waters—victims (or their surviving representatives) can trace the source of the illness without too much difficulty. Yet in this best-case scenario for foodborne illness litigation, Buzby and Frenzen were only able to identify eight lawsuits and two confidential settlements related to *V. vulnificus* over a 14-year period in which there would have been over 300 cases.²⁵¹

While the *V. vulnificus* example appears to suggest a higher claiming rate than Buzby and Frenzen's more general estimates, these numbers are far from representative. First, this kind of best-case litigation scenario is actually quite rare. Most cases of foodborne illness—tens of millions each year—do not involve outbreaks, involve longer incubation periods, are not investigated by public health authorities, and are never definitively linked to a source.²⁵² But even in cases where

when excluding nonterminating cases). But even applying the conventional wisdom to foodborne illness cases—that 95% of foodborne illness cases settle—and further assuming that all of those settlements are confidential, there would only be 19 confidential settlements for every 1 publicly reported case. The exaggerated assumption of 999 confidential settlements for every publicly reported foodborne illness case and the analysis that follows this assumption brings the absurdly low litigation rate for foodborne illness into sharp focus.

²⁴⁷ The upper range of Buzby and Frenzen's estimate (.00045%) multiplied by 1000 would be .45%.

²⁴⁸ See Buzby & Frenzen, *supra* note 245, at 645-47.

²⁴⁹ *Id.* at 645-46.

²⁵⁰ *Id.* at 646.

²⁵¹ *Id.* at 646-47.

²⁵² *Foodborne Illness and Outbreak*, *supra* note 53; Steve Mills, *Food Poisoning: Source of E. coli Illness Often Can't Be Found*, CHI. TRIBUNE (Nov. 18, 2009), http://articles.chicagotribune.com/2009-11-18/news/0911170437_1_source-of-e-coli-food-borne-food-poisoning [<http://perma.cc/7CRZ-MF5U>] (describing near impossibility of public health agencies identifying the source of suspected foodborne pathogens when the victim is not part of an outbreak); Moss & Martin, *supra* note 136 (comparing the frequency of having foodborne illness traced back to a particular supplier to a "meteor

foodborne illnesses are part of an outbreak, it is still unlikely that the foodborne illness will be connected with a source. Many outbreaks are never investigated.²⁵³ And even when investigated, nearly two-thirds of investigated outbreaks are never fully solved.²⁵⁴ But what is particularly telling about this *V. vulnificus* example is that so few of the grievously injured victims brought suit. Half of *V. vulnificus* cases result in death. Thus, there would have been roughly 150 deaths from *V. vulnificus* during the 14-year period examined by Buzby and Frenzen. Yet only 10 claims could be identified. But the dearth of *V. vulnificus* cases appears to be far from an uncommon scenario in the context of foodborne illness litigation. Other examples seem to confirm that most victims in best-case litigation scenarios do not file lawsuits.²⁵⁵

More recent data also supports Buzby and Frenzen's findings. Another food safety scholar, Alexia Brunet Marks, investigating litigation trends in foodborne illness cases, identified a total of 320 foodborne illness cases in an 11-year

strike"); see also Paul S. Mead et al., *Food-Related Illness and Death in the United States*, 5 EMERGING INFECTIOUS DISEASES 607, 616 (1999) (noting that 81% of foodborne illnesses are caused by unknown agents).

²⁵³ CLOSING THE GAP, *supra* note 91, at 1.

²⁵⁴ See *id.* (analyzing data from 10,409 foodborne disease outbreaks reported to the CDC that occurred between 2002 and 2011 and finding that only 3,933—38%—were fully solved).

²⁵⁵ For example, fewer than half of the victims appear to have filed suit in a widely reported 2011 *Listeria* outbreak linked to cantaloupes that sickened 147 people, 33 of whom died. See *Multistate Outbreak of Listeriosis*, *supra* note 226. Public health officials definitively matched each of the 147 victims to the contaminated cantaloupe and its supplier. *Id.* Yet only 66—fewer than half of the identified victims—appear to have pressed legal claims against the supplier. See Karen Robinson-Jacobs, *Victims of Food-Borne Illness Don't Usually Seek Legal Relief*, DALL. MORNING NEWS (May 24, 2015, 11:10 PM), <http://www.dallasnews.com/business/business-headlines/20150524-victims-of-food-borne-illness-dont-usually-seek-legal-relief.ece> [http://perma.cc/ACM5-ZVVF] (citing a noted attorney who stated that he knows of only 66 victims who pressed legal claims as a result of this outbreak). Despite the fact that 99% of the known victims in this outbreak were hospitalized, *Multistate Outbreak of Listeriosis*, *supra* note 226 (suggesting that victims' injuries were severe), an attorney familiar with these cases reported that fewer than 50% of victims filed legal claims against the known supplier of the cantaloupes. In another high-profile, widely publicized case, the Peanut Corporation of America was responsible for an outbreak of *Salmonella* Typhimurium linked to peanut butter in 46 states in 2008 and 2009. There were 714 confirmed victims of *Salmonella* Typhimurium linked to PCA's peanut butter, with 9 confirmed deaths. See *Multistate Outbreak of Salmonella Typhimurium Infections Linked to Peanut Butter, 2008-2009 (Final Update)*, *supra* note 203. Yet only 122 of the known 714 victims (17%) filed suit against PCA and its insurer seeking compensation. See Dan Flynn, *Litigation Twist Removed, PCA Payments Ready*, FOOD SAFETY NEWS (Sept. 2, 2010), <http://www.foodsafetynews.com/2010/09/after-another-strange-twist-is-removed-pca-payments-okd#.VoACGPH0nAI> [http://perma.cc/H9ZG-AVLD] (noting that only one of the 123 claims made against PCA was deemed suspicious and disallowed).

period, from 2000 to 2011.²⁵⁶ This works out to an average of only 29 cases per year.²⁵⁷ Since confidential, out-of-court settlements were not included in the Westlaw database used by Marks, the number of cases in the database does not reflect the total number of lawsuits filed.²⁵⁸ Even if we were to generously assume (as we did above with the Buzby and Frenzen data) that the actual litigation rate is higher than the number of cases uncovered by Marks by a factor of 1,000 (that is, only 1 out of 1,000 lawsuits actually filed made it into the Westlaw database, with the remaining 999 out of 1,000 lawsuits ending in either a confidential settlement in favor of the plaintiff or a dismissal), there still would only have been 320,000 cases filed during that 11-year period. When this figure is compared to the sheer number of foodborne illness cases during that same period—over 528 million²⁵⁹—it becomes apparent that food suppliers are not brought to account for the harm they cause.

Moreover, if victims injured by foodborne illness filed suit at a similar rate as other non-motor-vehicle-related and non-workplace-related injury victims, we should expect to see a filing rate of about three percent.²⁶⁰ This would result in nearly 17.2 million lawsuits filed during that 11-year period, not the mere 320,000 charitably assumed using Marks's findings multiplied by 1000.

While we cannot know for sure how many foodborne illness claims are actually filed, the Buzby and Frenzen study, the low level of claiming in the best-case scenarios outbreaks, and Marks's confirmatory findings strongly suggest that very few victims of foodborne illness file tort claims.

2. Likely Reasons for Low Litigation Rates

There are many potential reasons for the low litigation rate for foodborne illness. Causation problems likely play an important role in suppressing foodborne illness claims: the

²⁵⁶ Professor Marks identified these cases using the Westlaw Combined Jury Verdicts and Settlements database. Alexia Brunet Marks, *Check Please: Using Legal Liability to Inform Food Safety Regulation*, 50 HOUS. L. REV. 723, 761-62 (2013).

²⁵⁷ *Id.* This is similar to Buzby and Frenzen's figure of 29.4 cases per year for the period 1988–1997. Buzby & Frenzen, *supra* note 245, at 642.

²⁵⁸ Marks, *supra* note 256, at 763-64. Variations in state reporting mechanisms may also account for the low number of cases in the database. *Id.* at 764.

²⁵⁹ Each year, 48 million persons contract a foodborne illness. See *Estimates of Foodborne Illness*, *supra* note 2. Over an 11-year period, the total number of cases would come to 528 million.

²⁶⁰ Marc Galanter, *Real World Torts: An Antidote to Anecdote*, 55 MD. L. REV. 1093, 1099-102 (1996) (noting that empirical evidence suggests that claims are made by about three percent of non-motor-vehicle-related and non-workplace-related injuries).

victim cannot connect the foodborne illness with a particular source, he or she suspects a particular food source but no longer possesses the evidence (i.e., the food is gone and there are no leftovers), no lab tests were conducted to confirm the presence of a foodborne pathogen, or the victim simply cannot remember what or where he or she ate.²⁶¹ But there are other possible contributing factors. Undoubtedly, some victims face the same impediments that discourage victims in any tort lawsuit, including legal costs, time constraints, and small damage amounts.²⁶² Some victims do not equate their “stomach virus” symptoms with a foodborne illness.²⁶³ Others perhaps eschew litigation to protect their privacy or to avoid embarrassment.²⁶⁴

But there is another reason that could explain why so few claims are made: health insurance. Since health insurance typically pays the bulk of the medical costs associated with a foodborne illness, health insurance coverage reduces the incentive to file a tort claim.²⁶⁵ And the expansion of health insurance coverage under the Affordable Care Act will only intensify this effect.

B. *Underdeterrence of Food Safety Illnesses*

Although there are many plausible explanations for the extremely low litigation rate for foodborne illnesses, the underclaiming by victims of foodborne illness has a profound effect on the tort system by preventing it from adequately deterring the risky behavior that leads to foodborne illnesses.

1. Underdeterrence and the Incentive to Take Care

Steven Shavell provides a short but elegant equation that nicely illustrates the inadequate deterrence problem:

²⁶¹ Marks, *supra* note 256, at 755.

²⁶² Polinsky & Shavell, *supra* note 128, at 1453-59.

²⁶³ CTR. FOR SCI. IN THE PUB. INTEREST, ALL OVER THE MAP: A 10-YEAR REVIEW OF STATE OUTBREAK REPORTING 5 (2011), <http://cspinet.org/new/pdf/allverthemap.pdf> [<http://perma.cc/5W49-WP4R>].

²⁶⁴ See, e.g., Robinson-Jacobs, *supra* note 255 (citing attorney Gary Newland, speculating on why so few consumers bring tort cases based on a foodborne illness).

²⁶⁵ BUZBY ET AL., *supra* note 1, at 9-10; Polinsky & Shavell, *supra* note 128, at 1462-63 (noting that health insurance coverage dilutes the compensation benefit of a product liability claim). Although most health insurance policies have subrogation clauses that allow the health insurer to collect from a tortfeasor or from a judgment to reimburse the insurer for medical costs it covered, subrogation claims for foodborne illness costs are almost never pursued by health insurers. BUZBY ET AL., *supra* note 1, at 10-11. Insurers likely forego subrogation claims for foodborne illnesses for many of the same reasons victims do not pursue claims, including severe information impediments.

If the probability p of sanctions is less than 1 and the magnitude of the sanction is equal to the harm h , then the expected sanction ph will be less than h , leading to too little deterrence.²⁶⁶

When applied to the case of foodborne illness, the underdeterrence problem becomes apparent. If we use the highly optimistic (and quite improbable) litigation rate of 1 claim brought per every 220 cases of foodborne illness—the upper range of Buzby and Frenzen’s estimated litigation rate (1 claim brought per every 220,000 cases of foodborne illness), generously multiplied by 1,000²⁶⁷—and further assume that all filed foodborne illness cases are decided (or settled) in the plaintiff’s favor, the probability of sanctions will be .0045 (1/220), or .45%. If we use \$1,626 as the harm per case of foodborne illness, the average cost associated with the estimated 48 million cases of foodborne illness per year,²⁶⁸ the underdeterrence problem is evident. Shavell’s equation in the context of foodborne illness litigation looks like this:

If the probability p of sanctions is .45% (.0045) and the magnitude of the sanction, \$1,626, is equal to the harm h , then the expected sanction ph , is \$7.32. Since ph is less than h , ($\$7.32 < \$1,626$) there will be too little deterrence.

A tort system that provides inadequate deterrence has significant consequences for safety. First, potential injurers have a diminished incentive to take care to avoid harm to others. As illustrated by the above example, the tort system forces food suppliers to internalize only a fraction of the cost of the harm they cause. As a result, these suppliers have less incentive to invest in prevention. Second, underdeterrence causes actuarially fair premiums²⁶⁹ for food safety liability insurance to be lower than they would be under a full deterrence regime. Rather than reflecting the risk of foodborne illness that insureds actually pose to society, food safety liability premiums will only reflect the cost of diminished tort liability. Under such conditions, it may simply be less expensive for insureds to purchase liability

²⁶⁶ See Shavell, *supra* note 152, at 175. Shavell assumes that sanctions are not raised to create adequate deterrence. *Id.* For a discussion of augmented damages as a mechanism to promote adequate deterrence, see *infra* Section IV.C.

²⁶⁷ See *supra* Section IV.A.1.

²⁶⁸ See Scharff, *supra* note 5, at 123, 128. The figure of \$1,626 is the average cost associated with the estimated 48 million cases of foodborne illness per year and is based on Scharff’s enhanced model that includes pain and suffering estimates. The figure is derived from estimated costs for all cases of foodborne illnesses, ranging from mild to severe. *Id.* at 124.

²⁶⁹ An actuarially fair premium equals the expected value of the payments, with a minimum loading charge for administrative costs and residual risk. Wortham, *supra* note 140, at 843, 856.

insurance and exercise less care than to make reasonable efforts to reduce risk²⁷⁰—a scenario that increases moral hazard and worsens society's risk of foodborne illness.²⁷¹

2. Underdeterrence and the Difficulty of Observing and Pricing Risk

Underdeterrence also inhibits insurers' ability to effectively observe and price risk. To function effectively as risk regulators, liability insurers must be able to observe the risks their insureds pose to third parties and assign premiums to reflect those risks.²⁷² The exceedingly low litigation rate for foodborne illness may leave liability insurers with insufficient data about the risk that food suppliers actually pose to the public. In the absence of such data, liability insurers could have difficulty distinguishing cost-effective food safety measures from cost-ineffective (or even simply ineffective) measures. Such a lack of data would make it difficult for insurers to provide insureds effective financial incentives to reduce risk.²⁷³ But claims data is not the only source of risk data.

Indicators of the risk posed by food suppliers might also be found in the results of government enforcement actions (such as restaurant inspection results or sanctions imposed by government agencies) or private inspection reports. But such information sources are unlikely to give sufficiently clear risk data for the purposes of developing effective financial incentives to reduce risk. Government enforcement is not particularly robust,²⁷⁴ and the results of private inspections may not be available to insurers and in any event may not be reliable.²⁷⁵ And the evidence on the relationship between restaurant-

²⁷⁰ See Ambrose, *supra* note 182; Danzon *supra* note 182, at 316.

²⁷¹ In other words, food suppliers competing for consumers will keep their prices low by making only those safety investments that are justified by cost. The tort system does not force food suppliers to internalize the costs of the foodborne illnesses they cause, and thus suppliers have a diminished incentive to invest in reasonable (and costly) food safety precautions. Since liability insurance priced to reflect low tort liability may be less expensive than taking safety precautions (because the insurance protects the supplier against the actual risk he or she faces—a low risk of litigation), a rational food supplier will simply choose cheaper insurance protection over more expensive safety precautions.

²⁷² See *supra* Section III.E.

²⁷³ While insurers can (and do) impose cost sharing, such as deductibles and copayments, to provide insureds with an incentive to take care, cost sharing is a comparatively weak incentive. See Baker & Swedloff, *supra* note 161, at 1420; see also Ben-Shahar & Logue, *supra* note 17, at 208-09.

²⁷⁴ See *supra* Section I.B.3.

²⁷⁵ See *supra* Section I.C.

inspection results and outbreaks of foodborne illness is at best mixed, with some evidence suggesting there is no correlation.²⁷⁶

But there may be an even more fundamental pricing problem related to the exceedingly low risk of tort liability for foodborne illness. A low potential for tort liability translates into low premiums, as there is little risk to spread. Thus, insureds and insurers alike may lack meaningful incentives to lower the risks associated with foodborne illnesses as a means to further reduce already low premiums.

C. *Can Underdeterrence Be Corrected in Court?*

Foodborne illness claims are not the only tort claims that suffer from an underdeterrence problem. In response to underdeterrence in a variety of circumstances, corrective litigation techniques have been developed, including class actions and industry-wide liability, and others, such as augmented damage awards,²⁷⁷ have been proposed. Litigation mechanisms such as class actions and industry-wide liability, including enterprise liability and market share liability, will not, however, make any difference in cases where there is a causation problem,²⁷⁸ as in cases of foodborne illness where victims have difficulty identifying the cause of their harm or connecting that harm with a food product or a food supplier. Augmented awards, on the other hand, hold some potential, at least in theory, to address the underdeterrence problem in foodborne illness litigation cases.²⁷⁹

Under the augmented awards approach, underdeterrence could be remedied by allowing victims who do file and prevail at trial to recover damages equal to the amount of the damages that would have been awarded had all claims been filed.²⁸⁰ In theory, this could produce efficient deterrence,²⁸¹ particularly if augmented damages awards were fully covered by liability insurance and most or all food suppliers were covered by such insurance. Because the liability awards under an augmented awards approach would more closely reflect the social costs of

²⁷⁶ See *supra* Section I.B.4.

²⁷⁷ See *infra* notes 280-87 and accompanying text.

²⁷⁸ Thomas C. Galligan, Jr., *The Risks of and Reactions to Underdeterrence in Torts*, 70 MO. L. REV. 691, 711 (2005) (“If individuals cannot prove their claims, how does the class and aggregation of unprovable claims help?”); A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 873 (1998).

²⁷⁹ Galligan, *supra* note 278, at 704-05; Catherine M. Sharkey, *Punitive Damages as Societal Damages*, 113 YALE L.J. 347, 389-91 (2003); Robert D. Cooter, *Punitive Damages for Deterrence: When and How Much*, 40 ALA. L. REV. 1143, 1150 (1989).

²⁸⁰ Galligan, *supra* note 278, at 704-05.

²⁸¹ See Polinsky & Shavell, *supra* note 278, at 887-96.

unsafe food than the present system, the premiums charged by insurers would also more closely reflect the true social costs of unsafe food and would force food suppliers to internalize those costs.²⁸² This level of damages “makes conforming to the legal standard cheaper than violating it.”²⁸³

One example of augmented damages awards, offered by Robert Cooter, calculates total damages by multiplying the harm to the plaintiff by the reciprocal of the enforcement error.²⁸⁴ For example, if only 50% (or 1/2) of victims actually bring suit and recover full compensatory damages, then only 50% of the social costs caused by injurers will be internalized.²⁸⁵ Under this scenario, the ratio of total damages to compensatory damages paid by the injurer should equal 200% (or 2/1, the reciprocal of 1/2). Cooter argues that this “rule of the reciprocal” for enforcement error will increase damages to the socially optimal amount.²⁸⁶

The downsides of this approach are significant. First, it would result in a windfall to some victims, while resulting in no award to the others who were also injured, thus offending notions of justice.²⁸⁷ There is also the problem of imposing what would be punitive damages on a defendant not because of his or her willful or reckless behavior, but simply because other victims did not file their lawsuits.²⁸⁸ But even if courts could reasonably estimate and impose such augmented damages with reasonable accuracy (a highly dubious assumption), this approach would require all or nearly all food suppliers to carry liability insurance with sufficiently high limits—perhaps in the hundreds of millions of dollars—and would require the development of a system for insurers to pool losses or share risks so that no one insurer (and its pool of insureds) would bear a disproportionate share of the liability. Such a scheme would require national legislation, the calculation of a reasonably

²⁸² See Catherine M. Sharkey, *Economic Analysis of Punitive Damages: Theory, Empirics, and Doctrine*, in RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS 487-89 (Jennifer H. Arlen ed., 2013).

²⁸³ Cooter, *supra* note 279, at 1192.

²⁸⁴ *Id.* at 1148; see also Polinsky & Shavell, *supra* note 278, at 889 (offering a similar model).

²⁸⁵ That is, only 50% of the costs of the injuries will be borne by the injurers. The remaining 50% would still be borne by consumers.

²⁸⁶ Cooter, *supra* note 279, at 1190. However, Cooter argues that these damages should be applied to cases involving intentional acts, *id.*, or “reckless disregard.” Robert D. Cooter, *Punitive Damages, Social Norms, and Economic Analysis*, 60 L. & CONTEMP. PROBS. 73, 90-91 (1997).

²⁸⁷ Galligan, *supra* note 278, at 705. Of course, for the purposes of deterrence, payments to the victim are irrelevant. Payments need not go to victims to achieve deterrence. Baker & Siegelman, *supra* note 25, at 185.

²⁸⁸ Galligan, *supra* note 278, at 706.

accurate underdeterrence rate, the coordination of damages imposed by state and federal courts, and a host of other logistics. All of these difficulties render the augmented-damages approach an unlikely possibility.

V. THE RISKS OF FOOD SAFETY LIABILITY INSURANCE: MORAL HAZARD AND BEYOND

Although liability insurance can function effectively as a private safety regulator in many situations,²⁸⁹ the case of food safety liability insurance appears to provide a vivid counterexample. Despite its shortcomings as an effective private regulator of food safety, however, food safety liability insurance is not wholly without benefits. Liability insurance provides compensation to some victims of foodborne illnesses.²⁹⁰ It also offers financial incentives—through the use of deductibles, coinsurance, and policy caps—that can encourage food suppliers to take greater care.²⁹¹ And because tort liability is largely made possible by liability insurance,²⁹² some foodborne illness lawsuits do proceed. These suits may have a salutary effect on food safety. The bad publicity, damage to reputation, and loss of customers a food supplier risks as the result of these lawsuits are thought to provide some motivation to increase safety efforts.²⁹³ The question that ought to be asked, however, is not whether food safety liability insurance provides any benefits. Rather, we should question whether those benefits outweigh the potential harms posed by food safety liability insurance.

First, it ought to be noted that the benefits of food safety liability insurance are not particularly robust. For example, while some victims of foodborne illness do receive damages awards,²⁹⁴ the overwhelming majority of people sickened by food do not bring suit and receive no compensation from liability insurance.²⁹⁵ These victims must shoulder the costs of

²⁸⁹ See *supra* Part II.

²⁹⁰ See *supra* Section III.A.

²⁹¹ See Baker & Swedloff, *supra* note 161, at 1420; see also Ben-Shahar & Logue, *supra* note 17, at 208-09 (noting that while deductibles and copayments preserve an incentive by the insured to take care, that incentive is weaker than risk-based premiums).

²⁹² See *supra* notes 149-52 and accompanying text.

²⁹³ See, e.g., Lytton & McAllister, *supra* note 35, at 309 (quoting one food industry lawyer, Brad Sullivan, who stated that “liability exposure is a major driver of risk management among growers”); Marks, *supra* note 256, at 729 (arguing that lawsuits provide “economic signal to firms to invest in food safety”).

²⁹⁴ See, e.g., Flynn, *supra* note 255 (noting that 122 victims of foodborne illness linked to peanut butter received \$12 million in liability insurance settlements plus other “substantial” settlement payments).

²⁹⁵ See *supra* Section IV.A.1.

foodborne illness, though often with assistance from health insurance.²⁹⁶ And while insurance mechanisms like deductibles, coinsurance, and policy caps—all forms of partial coverage—can provide some incentive for food suppliers to take greater care, those incentives are not nearly as effective as differentiated premiums and only partially address moral hazard. As Ben-Shahar and Logue note, “Deductibles and copayments give the insured only a weakened incentive to take care because the insured enjoys only part of the social benefit of making the investment [in safety].”²⁹⁷ Finally, food suppliers already risk substantial reputational damage, loss of customers, and financial harm when they injure their customers in a significant and highly visible manner,²⁹⁸ particularly in the case of a prominent outbreak²⁹⁹—the scenario most likely to result in foodborne illness litigation.³⁰⁰ It is not entirely clear that litigation will cause further financial and reputational harm to a food supplier beyond the harm caused by the initial publicity following an outbreak. Thus, the additional threat of litigation on top of bad publicity may not motivate a food supplier to make its food any safer.³⁰¹

Moreover, there are significant risks accompanying food safety liability insurance, the most significant of which is an increase in moral hazard. But this increased risk of moral hazard has a different basis than the moral hazard concerns voiced by

²⁹⁶ Most victims of foodborne illness will likely be compensated, at least in part, by health insurance (either private insurance or public health insurance, such as Medicare or Medicaid), which will typically cover some or nearly all of a victim’s medical expenses. As of 2014, most Americans—90%—have some form of private or public health insurance. See *Health Insurance Coverage of the Total Population*, KAISER FAMILY FOUND., <http://kff.org/other/state-indicator/total-population/> [<http://perma.cc/CRC8-QK8N>] (last visited Apr. 7, 2016) (noting an uninsured rate of 10%).

²⁹⁷ Ben-Shahar & Logue, *supra* note 17, at 209.

²⁹⁸ See Polinsky & Shavell, *supra* note 128, at 1443-44 (noting that firms will be motivated by market forces to enhance product safety out of fear that sales may decrease if their products harm consumers).

²⁹⁹ See, e.g., Dan Flynn, *Chipotle Outbreak Illness Count Hits 514 as CMG Stock Dives Below \$500*, FOOD SAFETY NEWS (Dec. 23, 2015), <http://www.foodsafetynews.com/2015/12/chipotle-outbreak-illness-count-hits-514-as-cmg-stock-dives-below-500/#.VuxDhRj1ZKo> [<http://perma.cc/56U9-BTDL>] (noting that Chipotle Mexican Grill’s share prices lost 5% of their value within 24 hours of the CDC’s announcement of an *E. coli* outbreak associated with food served by the restaurant chain); Patrick Gillespie, *Chipotle Profits Tank After E. coli Scare*, CNN MONEY (Feb. 2, 2016, 5:37 PM), <http://money.cnn.com/2016/02/02/investing/chipotle-earnings-e-coli/> (reporting that Chipotle’s fourth quarter profits were 44% lower in 2015 than in 2014 in the wake of the restaurant’s *E. coli* outbreak); see Gillespie, *supra* (noting that Chipotle’s *E. coli* outbreak “crushed its ‘healthy food’ image and scared away many customers across the country”).

³⁰⁰ See *supra* Section IV.A.

³⁰¹ To be clear, however, most cases of foodborne illness will not result in reputational harm since they are never connected to a food source or supplier. See *supra* Section IV.A.1.

food researchers such as Buzby, Frenzen, and Rasco.³⁰² Their apprehensions about liability insurance were based on an *underestimation* of the risk-reducing capacity of insurance. These researchers, echoing traditional moral hazard concerns about insurance, worried that liability insurance coverage would dilute the deterrent effect of tort liability by transforming the costs of unsafe food into a business expense (the premium).³⁰³ This, in turn, would blunt a supplier's incentives to make its food safer.³⁰⁴ The current push for food safety liability insurance,³⁰⁵ however, has the potential to increase moral hazard for a different reason: proponents of food safety liability insurance *overestimate* the regulatory capacity of food safety liability insurance. In other words, proponents of food safety liability insurance believe it has the capacity to function effectively as a private regulator of food safety.³⁰⁶ The nature of foodborne illness, however, confounds the ability of liability insurance to improve food safety. The considerable information asymmetries between food suppliers and consumers³⁰⁷ and the enigmatic nature of foodborne illness³⁰⁸ make it hard for consumers to connect a foodborne illness to a particular food source. These information problems also promote moral hazard and adverse selection problems in the market for safe food.³⁰⁹ Moreover, optimism bias, a particularly pernicious form of cognitive bias (and one that is difficult to counteract), leads food suppliers to underestimate the risk of their food handling practices.³¹⁰ The result is a food supply beset by safety problems and a tort system that significantly underdeters foodborne illness. Without adequate tort liability, food safety liability insurance premiums will be relatively small—they will not reflect societal costs of unsafe food but will instead reflect the few judgments and settlements resulting from an extremely low litigation rate. Premiums that do not reflect social risk but instead reflect an exceedingly low risk of liability could have a perverse effect on a food supplier's incentive to take care. Food suppliers may find it less expensive to purchase liability insurance and exercise less

³⁰² See BUZBY ET AL., *supra* note 1.

³⁰³ See *supra* notes 32-34 and accompanying text.

³⁰⁴ See *supra* notes 32-34 and accompanying text.

³⁰⁵ See *supra* notes 17-22 and accompanying text.

³⁰⁶ See *supra* Sections II.B-II.D.

³⁰⁷ See *supra* Section III.A.2.

³⁰⁸ See *supra* Section III.A.3.

³⁰⁹ See *supra* Section III.A.4.

³¹⁰ See *supra* Section III.B.

care than to take reasonable precautions to lower the risk of foodborne illness—a moral hazard problem.³¹¹

But moral hazard is not the only potential risk that will accompany greater use of food safety liability insurance. Another such risk is the false signals that low food safety liability insurance premiums will send about the risk society faces from foodborne illnesses. Insurance premiums do more than simply spread risk. Premiums also send strong signals about the potential costs of a particular risk and provide insureds with information that helps them discern the appropriate levels of care they ought to take.³¹² High premiums suggest a greater level of risk, while lower premiums indicate a lower risk. Insurance prices that accurately reflect risk send signals that can lead to decreased risk taking.³¹³ Such concrete signals can be particularly effective in cases where insureds' decisionmaking is subject to biases,³¹⁴ as is the case with food safety.³¹⁵ Given the information problems and cognitive biases associated with food safety, food suppliers have a hard time accurately predicting or perceiving potential loss. Insurance premiums can only generate proper incentives regarding risk when those premiums accurately signal risk. To the extent that premiums reflect underdeterrence by the tort system rather than the actual risk of injury, insureds (and anyone else who is aware of the premiums) receive inaccurate signals about the risk of injury. At best, those inaccurate signals will be ignored. At worst, such signals will lead to riskier behavior due to erroneous beliefs about the real risks associated with foodborne illnesses.³¹⁶

Another risk is the potential for food safety liability insurance to dampen the demand for other types of insurance products that may actually give insurers the ability to effectively

³¹¹ See *supra* Section IV.B.1.

³¹² See Susan K. Laury & Melayne Morgan McInnes, *The Impact of Insurance Prices on Decision Making Biases: An Experimental Analysis*, 70 J. RISK & INS. 219, 220 (2003) (“If the relative prices of insurance contracts correctly reflect the relative probability of loss, the price of each contract may be an important signal of the risk of each choice or activity.”); Michelle E. Boardman, *Known Unknowns: The Illusion of Terrorism Insurance*, 93 GEO. L.J. 783, 838 (2005) (“Insurance prices provide one of the most obvious, and potentially meaningful, indications of the likelihood of an event and the size of its loss.”). Moreover, if premiums are accurately priced, then risk-reduction efforts can be accurately priced as well, giving insureds the ability to evaluate the benefits and costs of specific risk-reduction efforts. See Ben-Shahar & Logue, *supra* note 17, at 207 (noting that if insurers price the expected risk reduction associated with the safety investment, insureds can make the choice of whether that safety investment makes sense for them).

³¹³ Laury & McInnes, *supra* note 312, at 224-26, 230-31.

³¹⁴ *Id.* at 220-26, 230-31 (noting that accurate insurance prices lessen reliance on biases).

³¹⁵ See *supra* Section III.B.

³¹⁶ See Boardman, *supra* note 312, at 839-40.

manage at least some of the risks associated with foodborne illness. Such products, for which coverage is triggered by a readily detectable occurrence or condition, appear to be more effective vehicles for managing some of the risks associated with food. One such insurance product is food recall insurance, which provides coverage for losses associated with the recall of a contaminated or unsafe food.³¹⁷ If a food supplier determines that it has sent contaminated food to market, it has two choices: recall the food or do nothing. Recalls can prevent further consumption of contaminated food products,³¹⁸ but they can also be very expensive,³¹⁹ creating an incentive to delay (or avoid entirely) a recall. Given the risk of significant economic loss associated with a product recall and the relatively low risk currently presented by the tort system, food suppliers rationally avoid or at least delay a product recall when they become aware of a potential food safety problem.³²⁰ Insurance companies have responded by offering recall insurance products.

While recall insurance cannot eliminate all the financial risks associated with a recall, recall coverage can minimize some of those risks,³²¹ thereby promoting more timely recalls when a supplier's products pose risks to public health and helping to remove dangerous products from the market. As such, recall insurance could improve food safety.³²² But unlike liability insurance, which depends on a highly improbable event—tort damages or settlement payments resulting from a legal claim of injury from a foodborne illness—recall insurance

³¹⁷ Skees et al., *supra* note 31, at 100. Recall insurance is by no means the only type of insurance product that has the potential to lower the risk of foodborne illness. For example, Tom Baker has proposed a framework for a risk-shifting product, a bonded import safety warranty, that could supplement government safety regulation. See Tom Baker, *Bonded Import Safety Warranties*, in *IMPORT SAFETY: REGULATORY GOVERNANCE IN THE GLOBAL ECONOMY* 215 (Cary Coglianese et al. eds., 2009).

³¹⁸ Skees et al., *supra* note 31, at 99-100.

³¹⁹ A recall will generate direct costs, including costs associated with notice to the public and the logistics of recovering and disposing of the contaminated food, and indirect costs, such as reputational damage, loss of consumer confidence, lost profits, loss of future revenue, and, for publicly traded companies, a decrease in share value. See, e.g., Michael R. Thomsen & Andrew M. McKenzie, *Market Incentives for Safe Foods: An Examination of Shareholder Losses from Meat and Poultry Recalls*, 83 *AM. J. AGRIC. ECON.* 526, 536 (2001) (finding that beef and chicken recalls involving serious threats to consumer health reduce shareholder wealth in a company by a magnitude of 1.5%–3%); see also Jeffrey A. Lamken, Note, *Efficient Accident Prevention as a Continuing Obligation: The Duty to Recall Defective Products*, 42 *STAN. L. REV.* 103, 109 (1989) (noting that damage to a firm's brand and goodwill is often the costliest loss associated with a product recall).

³²⁰ See Skees et al., *supra* note 31, at 108.

³²¹ Amy O'Connor, *Insurers: Product Recalls a 'Death Sentence' to Food Manufacturers, Coverage Demand Still Lags*, *INS. J.* (Oct. 7, 2013), <http://www.insurancejournal.com/magazines/features/2013/10/07/306786.htm> [<http://perma.cc/H52S-KRZA>].

³²² See Skees et al., *supra* note 31, at 108-09.

depends on a readily identifiable event (a recall) that has known and measurable direct and indirect costs. Insurers can manage these costs to reduce claims. That is not to say that recall insurance overcomes all market problems, but its one focus—managing the risks associated with a recall—gives it the ability to control one aspect of food risk in a socially beneficial way. Yet even the FDA’s new mandatory recall authority³²³ has not spurred significant demand for recall insurance. Despite its benefits, recall insurance is still seen as “luxury” coverage, in part because liability insurance appears to be available to cover foodborne illness claims.³²⁴

No doubt, there are other potential risks associated with a proliferation of food safety liability insurance.³²⁵ But the risks of increased moral hazard, dispersion of faulty risk signals, and a dampened demand for insurance products that could lower the hazards posed by contaminated food should give pause to advocates of an increased reliance on food safety liability insurance, particularly given the weak benefits food safety liability insurance appears to offer.

CONCLUSION

In the presence of ineffective government regulation of food safety, some believe that food safety liability insurance could lower the risk of foodborne illness. As a safety regulator, liability insurance has strengths and weaknesses that are highly context dependent. This article has described the significant obstacles to using food safety liability insurance as a regulator of food safety. The complex relationship between the information problems related to food safety, the confounding nature of foodborne illness, diminished tort liability, and the presence of cognitive biases strongly suggest that food safety liability insurance has a limited capacity to improve food safety. What’s more, the likelihood that premiums will not accurately reflect the risk of foodborne illnesses means that food safety liability insurance could increase moral hazard, send inaccurate signals to food suppliers regarding the risk of foodborne illnesses,

³²³ See *supra* note 99 and accompanying text.

³²⁴ O’Connor, *supra* note 321 (quoting Louis Lubrano, senior vice president of Global Crisis Management for Liberty International Underwriters).

³²⁵ For example, the availability of food safety liability insurance could replace demand for reform of weak governmental food safety regulation. Indeed, food safety liability insurance is already used by some as a gap-filler for exceptions to government regulation of food safety. See Boys et al., *The Food Safety Modernization Act*, *supra* note 20 (noting that demand for food safety liability insurance has arisen in response to an exemption to the FSMA).

and diminish demand for more effective insurance products, all of which could lead to more—not fewer—cases of foodborne illness. This analysis has significant implications for food safety by moving the discussion of insurance beyond the traditional moral hazard objections voiced by early food safety researchers, who underestimated the regulatory power of liability insurance, and providing a more thorough analysis for modern food safety advocates who may overestimate the regulatory power of liability insurance to control food risk.