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USING INSURANCE TO REGULATE FOOD SAFETY: FIELD NOTES FROM THE FRESH PRODUCE SECTOR

Timothy D. Lytton*

ABSTRACT

Foodborne illness is a public health problem of pandemic proportions. In the United States alone, contaminated food sickens an estimated 48 million consumers annually, causing 128,000 hospitalizations and 3,000 deaths. Nowhere is this crisis more acute than in the fresh produce sector, where microbial contamination in growing fields and packing houses has been responsible for many of the nation's largest and deadliest outbreaks. This Article examines emerging efforts by private insurance companies to regulate food safety on farms that grow fresh produce.

Previous studies of using insurance to regulate food safety rely on economic theories that yield competing conclusions. Optimists argue that insurance can promote efficient risk reduction. Skeptics counter that insufficient information regarding the root causes of contamination renders insurance impotent to reduce food safety risk. This Article adds a sociolegal perspective to this debate. Based on interviews with insurance professionals, the Article documents how, notwithstanding limited information, underwriters employ a variety of techniques to encourage compliance with government food safety regulations and conformity to industry standards. These techniques include premium discounts for clients who adopt state-of-the-art food safety practices, coverage exclusions for high-risk activities, and loss control advice about how to avoid contamination.

Insurance plays a growing and potentially transformative role in

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advancing food safety. Government food safety regulation has traditionally been hampered by inadequate inspection resources. This Article advocates expanding insurance to fill oversight gaps in the U.S. food safety system, and it offers specific recommendations for how to nurture emerging markets for food safety coverage.

The findings presented in this Article have implications for understanding how insurance regulates risk more generally. Economic analysis of many well-established types of insurance—for example, life, health, homeowners, and auto—emphasizes the role of actuarial data in pricing premiums, determining coverage limits, and informing loss control advice. However, the underwriting professionals in this Article who describe their efforts to improve food safety on farms tell a different story. They operate in an emerging market with a low volume of claims and a dearth of actuarial data. Three aspects of their work stand out. First, underwriting in this area is more impressionistic than economic analysis assumes. When assessing the risk of microbial contamination on farms, underwriters rely more on their intuitions about a farmer's competence and on media coverage of high-profile foodborne illness outbreaks than on actuarial data. Second, the mindset of these underwriters is more administrative than economic. They think in terms of regulatory compliance and standards conformity rather than optimal risk reduction. Third, farm size determines the role of insurance in managing risk. High-premium coverage for larger farms provides more underwriting resources for risk management than low-premium policies priced for small farms. These findings suggest that although economics explains the logic of insurance as form of risk regulation, understanding how underwriters regulate risk in practice, especially in emerging markets, requires attention to professional judgment, bureaucratic thinking, and resource constraints.

INTRODUCTION

California's Salinas Valley is blessed with rich soil and moderate temperatures that make it an ideal place for cultivating fresh produce. Famous for abundant fields of lettuce, spinach, and tomatoes, the region has long been known as "America's salad bowl."¹ However, in recent years, it has also become notorious as the source of recurrent foodborne illness outbreaks traced to leafy greens contaminated with virulent bacterial pathogens such as *E. coli* O157, *Salmonella*, and *Listeria monocytogenes*.²

1. See generally BURTON ANDERSON, AMERICA'S SALAD BOWL: AN AGRICULTURAL HISTORY OF THE SALINAS VALLEY (2000).

2. Kate Gibson, *A Dozen Sickened in Another E. coli Outbreak Linked to Romaine Lettuce*, CBS NEWS (Nov. 12, 2020), <https://www.cbsnews.com/news/romaine-lettuce-recall-e-coli-outbreak/>

These troubles in the Salinas Valley, and in fresh produce fields and packinghouses across the United States more generally, offer a window on the challenges of preventing microbial contamination of food and the widespread illness that it causes. Foodborne illness is a nationwide public health problem of pandemic proportions. The Centers for Disease Control and Prevention (CDC) estimates that contaminated food causes 48 million cases of acute gastroenteritis each year, resulting in 128,000 hospitalizations, 3,000 deaths, and \$1.8 billion in healthcare costs.³ More than twice as many Americans are sickened every year by foodborne pathogens than contracted coronavirus in 2020.⁴ More than double the number of Americans fall victim to foodborne illness annually than suffer injuries from traffic accidents, falls, cuts, natural disasters, cycling, poisoning, and burns combined.⁵ Fresh produce plays a prominent role in this food safety pandemic. According to a 2015 report by the Center for Science and the Public Interest, “[p]roduce caused more illnesses than any other food category and had the largest number of outbreaks for any single food category.”⁶

[<https://perma.cc/UW99-49Y4>]; Kevin Loria, *Leafy Greens Safety Guide: In an Age of Rampant Romaine Contamination, Can Our Salads be Saved?*, CONSUMER REPS. (Jan. 27, 2020), <https://www.consumerreports.org/food-safety/leafy-greens-safety-guide> [<https://perma.cc/V425-GGGB>]; Teresa Carr, *In Food Regulations, a Surprising Paucity of Research*, UNDARK (Feb. 5, 2020), <https://undark.org/2020/02/05/lack-research-food-safety-regulations/> [<https://perma.cc/TW5W-LHDL>] (relating that in 2018 and 2019 alone, the CDC reported 474 illnesses, 219 hospitalizations, and six deaths from multistate outbreaks linked to leafy greens); *FOODBORNE ILLNESS OUTBREAK DATABASE* <http://outbreakdatabase.com/search/?outbreak=lettuce+spinach> [<https://perma.cc/7C6D-C9BH>] (search results for “lettuce” and “spinach”); Katherine E. Marshall, April Hexemer, Sharon L. Seelman, Marianne K. Fatica, Tyann Blessington, Maha Hajmeer, Hannah Kisselburgh, Robin Atkinson, Kristin Hill, Davendra Sharma, Michael Needham, Vi Peralta, Jeffrey Higa, Karen Blickenstaff, Ian T. Williams, Michael A. Jhung, Matthew Wise, & Laura Gieraltowski, *Lessons Learned from a Decade of Investigations of Shiga Toxin-Producing Escherichia coli Outbreaks Linked to Leafy Greens, United States and Canada*, 26 EMERGING INFECTIOUS DISEASES 2319 (2020).

3. *Estimates of Foodborne Illness in the United States*, CENTERS FOR DISEASE CONTROL AND PREVENTION (Nov. 5, 2018), <https://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html> [<https://perma.cc/8BX8-VQ7B>]; SANDRA HOFFMANN, BRYAN MACULLOCH & MICHAEL BATZ, ECON. RSCH. SERV., U.S. DEP’T OF AGRIC., ECONOMIC INFORMATION BULLETIN NO. 140, ECONOMIC BURDEN OF MAJOR FOODBORNE ILLNESSES ACQUIRED IN THE UNITED STATES 11 (2015), https://www.ers.usda.gov/webdocs/publications/43984/52807_eib140.pdf [<https://perma.cc/77TZ-E3NM>] (includes cost of medical care for fifteen leading foodborne illnesses, which constitute approximately 95 percent of the total). For analysis of these estimates, see TIMOTHY D. LYTTON, *OUTBREAK: FOODBORNE ILLNESS AND THE STRUGGLE FOR FOOD SAFETY* 3–8, 243–45 (2019).

4. *CDC COVID Data Tracker*, CTRS. FOR DISEASE CONTROL AND PREVENTION, archived at <https://perma.cc/2KNM-93A7> (reporting 19,663,976 total COVID-19 cases in the United States between January 21, 2020 and December 31, 2020).

5. LYTTON, *supra* note 3, at 6.

6. NILS FISCHER, ARIEL BOURNE & DAVID PLUNKETT, CTR. FOR SCI. IN THE PUB. INT., *OUTBREAK ALERT! 2015: A REVIEW OF FOODBORNE ILLNESS IN THE U.S. FROM 2004–2013* (2015), <https://cspinet.org/sites/default/files/attachment/outbreak-alert-2015.pdf> [<https://perma.cc/UM5X-4EUW>]. See also RENEE JOHNSON, CONG. RSCH. SERV., IF11092, *FOODBORNE ILLNESS AND OUTBREAKS FROM FRESH PRODUCE* (2019), <https://fas.org/sgp/crs/misc/IF11092.pdf> [<https://perma.cc/PZ85-GU3F>]; John A. Painter et al., *Attribution of Foodborne Illnesses, Hospitalizations, and Deaths to Food Commodities by Using Outbreak Data, United States, 1998–2008*, 19 EMERGING INFECTIOUS DISEASES 407, 409–10 (2013) (finding that produce commodities accounted for 46 percent foodborne illness outbreaks between 1996 and 2008 with an implicated food vehicle and a single etiological agent).

Efforts to reduce foodborne illness involve diverse actors working in a variety of institutional settings. The U.S. food safety system combines government regulation at the federal, state, and local levels; industry supply chain management supported by private food safety auditing; and civil liability and insurance underwriting.⁷ This Article focuses on the last—and perhaps most obscure—of these components.

The Article documents emerging efforts by private insurance companies to regulate food safety on farms that grow fresh produce. Interviews with insurance professionals reveal how underwriters employ a variety of techniques to encourage compliance with government food safety regulations and conformity to industry standards.⁸ These techniques include premium discounts for clients who adopt state-of-the-art food safety practices, coverage exclusions for high-risk activities, and loss control advice about how to avoid contamination. Based on these findings, the Article advocates expanding insurance to improve oversight in the U.S. food safety system, and it offers specific recommendations for how to nurture emerging markets for food safety coverage.⁹

Insurance could potentially be transformative in advancing food safety on farms. Government regulation has traditionally been hampered by inadequate inspection resources. Federal, state, and local agencies conduct routine inspections of only a tiny fraction of the more than 120,000 U.S. farms that grow fresh produce intended for retail sale to consumers.¹⁰ Significantly expanding the number of government inspections would require either reallocating resources from other programs, which would stretch agency budgets even thinner, or receiving large funding increases, which seems politically unrealistic. By contrast, expanding insurance generates revenue that underwriters can use to inspect and monitor farms.

Moreover, insurance is more reliable than other forms of private governance. For example, in the fresh produce sector, private food safety auditors inspect thousands of farms annually.¹¹ These auditors are, for assorted reasons, often paid by the growers and processors whom they audit.¹² The resulting conflict of interest among auditors, who are eager to maintain good relations with those who

7. For a detailed systems theory analysis of U.S. food safety governance, see LYTTON, *supra* note 3, at 21–22, 152–61, 236–38. For a description of what underwriting entails and the role of underwriters in insurance, see *infra* Part V.A.

8. See *infra* Part V.D.

9. See *infra* Part IV.A.1.

10. This estimate of the number of U.S. farms that grow fresh produce for sale is from the FDA. U.S. FOOD & DRUG ADMIN., FDA-2011-N-0921, STANDARDS FOR GROWING, HARVESTING, PACKING AND HOLDING OF PRODUCE FOR HUMAN CONSUMPTION 40 (2011), <https://www.fda.gov/files/about%20fda/published/Standards-for-the-Growing--Harvesting--Packing-and-Holding-of-Produce-for-Human-Consumption-Regulatory-Impact-Analysis.pdf> [<https://perma.cc/69PN-DRCX>] [hereinafter *Standards for Growing RIA*]. For an estimate of the number of routine annual food safety inspections by federal officials of farms that grow fresh produce, see discussion *infra* Part III.C.1; see also LYTTON, *supra* note 3, at 206–08.

11. The scale of private food safety auditing far exceeds that of all federal and state inspections combined. See discussion *infra* Part II.C.2; see also LYTTON, *supra* note 3, at 129, 208.

12. For an explanation of why food safety audits in the fresh produce sector are commonly paid for by growers, see discussion *infra* Part II.C.2; see also LYTTON, *supra* note 3, at 208–10.

pay them, leads some auditors to lower standards and cut corners.¹³ Insurance companies are also paid by growers and processors. However, unlike private food safety auditors, insurers stand to benefit from rigorous standards and careful inspections aimed at reducing the risk of food safety failures that might generate claims.

Beyond food safety, my findings regarding underwriting practices in the fresh produce sector have important implications for understanding how insurance regulates risk more generally. Economic analysis of many well-established types of insurance—for example, life, health, homeowners, and auto—emphasizes the role of actuarial data in pricing premiums, determining coverage limits, and informing loss control advice.¹⁴ However, the underwriting professionals in this Article who describe their efforts to improve food safety on farms operate in an emerging market with a low volume of claims and a dearth of actuarial data.¹⁵ Three aspects of their work stand out.

First, underwriting in this area is impressionistic rather than data driven. Interviewees provided specific examples of how premium discounts, coverage exclusions, and loss control advice encourage fresh produce growers to take food safety precautions. However, these insurance incentives are not informed by quantitative risk assessments. Instead, they are based on underwriters' personal intuitions about farming operations and anxiety prompted by large outbreaks, high-profile litigation, and costly settlements. It is often said that underwriting is more of an art than a science.¹⁶ For underwriters evaluating food safety, this means relying on their general impressions of salient risks without the benefit of robust actuarial data.

Second, the mindset of these underwriters is more administrative than economic. Rather than aspiring to an economic conception of optimal food safety risk reduction, underwriting professionals aim for the more modest administrative objectives of compliance with government regulations and conformity to industry standards. In the fresh produce sector, these regulations and standards are, for the most part, based on consensus among industry, academic, and government experts with decades of experience attempting to reduce microbial contamination in growing fields and processing facilities.¹⁷ However, none of these experts have been able to demonstrate that any of the regulations or standards have been effective in reducing foodborne illness. That is, although there is scientific evidence linking specific food

13. For a detailed analysis of conflict of interest in private food safety auditing and measures designed to address it, see Timothy D. Lytton & Lesley K. McAllister, *Oversight in Private Food Safety Auditing: Addressing Auditor Conflict of Interest*, 2014 WIS. L. REV. 289 (2014).

14. See, e.g., Omri Ben-Shahar & Kyle D. Logue, *Outsourcing Regulation: How Insurance Reduces Moral Hazard*, 111 MICH. L. REV. 197 (2012). Actuarial data are statistics used to calculate risk. *Actuarial*, Vocabulary.com, <https://www.vocabulary.com/dictionary/actuarial>.

15. For an explanation of the infrequency of claims in food safety insurance, see discussion *infra* Part III.B.

16. E.g., *Underwriting—art or science?*, ACTUARIAL POST, <http://www.actuarialpost.co.uk/article/underwriting-art-or-science-2367.htm> [https://perma.cc/4TKM-8RGW] (reporting that a majority of invited guests at a debate hosted by Lloyd's Marketing Association voted in favor of a motion that underwriting is an art); see also RICHARD V. ERICSON & AARON DOYLE, UNCERTAIN BUSINESS: RISK, INSURANCE, AND THE LIMITS OF KNOWLEDGE 15 (2004).

17. See discussion *infra* Part II.B; see also LYTTON, *supra* note 3, at 162–69.

safety precautions to reductions in microbial loads on fresh produce, there is no data connecting reduced microbial loads to lower rates of human illness—a connection that has, so far, eluded researchers due to incomplete disease surveillance data, the rarity of successful root cause analysis in outbreak investigations, and limited knowledge regarding what could be highly variable microbial load thresholds necessary to trigger illness in different classes of individuals.¹⁸ The infrequency of insurance claims arising out of foodborne illness—some interviewees report never having seen one—renders insurance companies as incapable of assessing the effectiveness and efficiency of specific food safety measures in reducing foodborne illness as everyone else.¹⁹ The tendency to manage what one can measure leads insurance carriers to focus their risk management efforts on the measurable metrics of regulatory compliance and standards conformity rather than the elusive goal of optimal risk reduction.²⁰

Third, the capacity of insurance to incentivize regulatory compliance and standards conformity varies according to the size of premiums, which in turn depends on farm size. Larger premiums are necessary to pay for detailed inspections of farming operations and the technical expertise necessary to educate underwriters and advise policyholders. Insurance is like many other products: you get what you pay for. Accordingly, risk reduction efforts are more prevalent when insurance companies are underwriting agribusiness policyholders willing to pay high premiums than when they insure small farmers operating on thin margins.

Thus, the account presented here reveals that, when it comes to emerging markets, risk regulation through insurance is likely to be impressionistic rather than data driven, focused on compliance instead of optimal risk reduction, and dependent on the capacity of policyholders to pay premiums large enough to pay for inspections and expertise.

The Article is organized into six parts. Part I situates my analysis within the academic literature by legal scholars, economists, and sociologists on insurance as regulation. It also provides details about my methodology and study design. Part II presents an overview of food safety regulation in the fresh produce sector. Part III explains why it is so difficult to identify the root causes of foodborne illness and how this problem impacts the use of insurance as a means of risk reduction. Part IV surveys the various types of insurance that cover food safety risks associated with fresh produce. Part V describes how insurance professionals take food safety risk

18. For fuller analysis of how little is known about the efficacy and efficiency of food safety efforts, see LYTTON, *supra* note 3, at 62–64 (fluid milk), 108–13 (meat & poultry), 163–69 (produce), 232–34, 240–41 (generally); see also Travis Minor & Matt Parrett, *The Economic Impact of the Food and Drug Administration's Final Juice HACCP Rule*, 68 FOOD POLICY 206, 210–11 (2017) (estimating that food safety rules governing the production of juices “led to an annual reduction of between 462 and 508 foodborne illnesses” using CDC foodborne illness surveillance data). For a discussion of various methodologies for measuring the impact of food safety regulations, see Maddalena Ragona & Mario Mazzocchi, *Measuring the Impacts of Food Safety Regulations: A Methodological Review*, 12th Congress of the European Association of Agricultural Economics (2018), DOI: 10.22004/ag.econ.43864 [<https://perma.cc/XZQ8-4ANP>].

19. See *infra* note 34 and accompanying text.

20. For a leading study on how insurance companies serve as compliance managers, see Shauhin A. Talesh, *Data Breach, Privacy, and Cyber Insurance: How Insurance Companies Act as “Compliance Managers” for Business*, 43 LAW & SOC. INQUIRY 417 (2018).

into account in the design, sale, and administration of insurance for fresh produce growers. Part VI assesses of the capacity of insurance to reduce food safety risk in the fresh produce sector and offers recommendations for enhancing that capacity. Part VI also discusses the implications of this case study for understanding insurance as a form of risk regulation more generally.

I. THEORETICAL FRAMEWORK & METHODOLOGY

This case study of food safety coverage in the fresh produce sector contributes to a robust academic literature on insurance as regulation. In the area of food safety, scholars have relied heavily on theoretical economic analysis. The interviews conducted for this study offer new empirical data and a sociolegal perspective that supports a more complete picture of how insurance regulates food safety risk.

A. Insurance as Regulation

Insurance has traditionally been understood as a means of pooling risk to shield policyholders from the potentially ruinous financial consequences of unexpected harms.²¹ One downside of insurance is that, by relieving policyholders of financial responsibility for accidents, insurance eliminates an important incentive for them to exercise care, which could increase the risk of accidents. Economists refer to this as the problem of moral hazard.²² To address the problem, insurance providers frequently create new incentives for policyholders to reduce risk.²³ As legal scholars Tom Baker and Rick Swedloff explain: “Once an insurer underwrites a risk, the insurer has every reason to try to reduce its payouts by encouraging insureds to prevent the potential loss from materializing. That can, and sometimes does, lead insurers to attempt to regulate loss-producing activities.”²⁴

Numerous case studies describe how insurers employ a variety of techniques to reduce risk.²⁵ These techniques include premium discounts for

21. Julia Kagan, *Insurance*, INVESTOPEDIA (Mar. 25, 2020) <https://www.investopedia.com/terms/i/insurance.asp> [<https://perma.cc/YG2M-L4FX>].

22. Mark V. Pauly, *The Economics of Moral Hazard: Comment*, 58 AM. ECON. REV. 531 (1968); see also Steven Shavell, *On Moral Hazard and Insurance*, 93 Q.J. ECON. 541 (1979); Tom Baker, *On the Genealogy of Moral Hazard*, 75 TEX. L. REV. 237 (1996).

23. See, e.g., Tom Baker & Rick Swedloff, *Regulation by Liability Insurance: From Auto to Lawyers Professional Liability*, 60 UCLA L. REV. 1412 (2013); see also Ben-Shahar & Logue, *supra* note 14; Haito Yin, Howard Kunreuther & Matthew White, *Risk-Based Pricing and Risk-Reducing Effort: Does the Private Insurance Market Reduce Environmental Accidents?*, 5 J.L. & ECON. 325 (2011); RICHARD V. ERICSON, AARON DOYLE & DEAN BARRY, *INSURANCE AS GOVERNANCE* (2003); CAROL A. HEIMER, *REACTIVE RISK AND RATIONAL ACTION: MANAGING MORAL HAZARD IN INSURANCE CONTRACTS* 42-48 (1985).

24. Baker & Swedloff, *supra* note 23, at 1415; see also Ben-Shahar & Logue, *supra* note 14, at 199.

25. See, e.g., Baker & Swedloff, *supra* note 23 (analyzing auto insurance, professional malpractice insurance, commercial general liability insurance, directors and officers liability insurance); Ben-Shahar & Logue, *supra* note 14 (analyzing products liability insurance, workers’ compensation insurance, auto insurance, homeowners’ insurance, environmental liability insurance, tax liability insurance); see generally Tom Baker & Charles Silver, *How Liability Insurers Protect Patients and Improve Safety*, 68 DEPAUL L. REV. 209 (2019) (analyzing medical malpractice insurance); Shauhin Taresh, *Legal*

policyholders who adopt precautions, coverage exclusions for high-risk activities, and loss control advice about how to avoid accidents that might give rise to claims.²⁶ However, not all insurers provide incentives to reduce risk. Underwriters in a particular field of insurance may lack sufficient knowledge and experience to calculate discounts, design exclusions, or offer advice. It may be prohibitively costly for insurers to inspect the operations of policyholders and to monitor their conduct.²⁷ Moreover, in some cases, insurance may undermine government risk regulation. For example, insurers sometimes coach policyholders in how to avoid legal liability without avoiding the conduct that liability is supposed to deter.²⁸ Thus, according to legal scholar Shauhin Talesh, insurance as a form of risk regulation is a mixed bag of “the good, the bad, and the ugly.”²⁹

When it comes to food safety, scholars disagree about the capacity of insurance to reduce risk. On one side of this disagreement, Omri Ben-Shahar and Kyle Logue assert that insurers are uniquely motivated and equipped to assess the individual risk profile of different operations, tailor incentives to reduce those risks, and monitor compliance with requirements and recommendations.³⁰ Insurers are motivated to price risk accurately since “insurers that set inaccurate premiums . . . would suffer a loss of profit and, at the limit, would be competed out of business entirely.”³¹ Insurers are equipped with “a centralized network of agents,” including underwriters, loss control experts, and adjusters to monitor compliance.³² Ben-Shahar and Logue predict that widespread food product liability insurance would “generate incentives for optimal safety” and they recommend compulsory liability insurance for all food producers.³³

Intermediaries: How Insurance Companies Construct the Meaning of Compliance with Antidiscrimination Laws, 37 L. & POL’Y 209 (2015) (employment practices liability insurance); John Rappaport, *How Private Insurers Regulate Public Police*, 130 HARV. L. REV. 1541 (2017) (analyzing liability insurance for police misconduct); Shauhin Talesh, *Data Breach, Privacy, and Cyber Insurance: How Insurance Companies Act as “Compliance Managers” for Businesses*, 43 L. & SOC. INQUIRY 417 (2018) (analyzing cyber insurance).

26. See, e.g., Baker & Swedloff, *supra* note 23; Ben-Shahar & Logue, *supra* note 14; Talesh, *Data Breach*, *supra* note 25.

27. See, e.g., TOM BAKER & SEAN J. GRIFFITH, ENSURING CORPORATE MISCONDUCT: HOW LIABILITY INSURANCE UNDERMINES SHAREHOLDER LITIGATION 118–24 (2010) (discussing the lack of risk reduction efforts among underwriters of directors’ and officers’ liability insurance); see also Shauhin Talesh, *Insurance Companies as Corporate Regulators: The Good, The Bad, and The Ugly*, 66 DEPAUL L. REV. 463, 490 n.122 (2017).

28. Talesh, *Legal Intermediaries*, *supra* note 25 (describing how insurers who provide employment practices liability insurance help employers avoid liability without reducing discriminatory practices in the workplace); see also Tom Baker & Peter Siegelman, *The Law and Economics of Liability Insurance: A Theoretical and Empirical Review*, in RESEARCH HANDBOOK ON THE ECONOMICS OF TORTS 180, n.15 (Jennifer Arlen ed., 2013) (distinguishing liability prevention from loss prevention).

29. Talesh, *Insurance Companies*, *supra* note 27.

30. Ben-Shahar & Logue, *supra* note 14, at 232–37.

31. *Id.* at 234.

32. *Id.* at 234, 236–37.

33. Ben-Shahar & Logue, *supra* note 14, at 243–45; see also ELIZA M. MOJDUSZKA, PRIVATE AND PUBLIC FOOD SAFETY CONTROL MECHANISMS: INTERDEPENDENCE AND EFFECTIVENESS (2004), <http://ageconsearch.umn.edu/record/19987/files/sp04mo07.pdf> [https://perma.cc/93H2-H42D].

On the other side of the disagreement, John Cogan argues that the inability of most foodborne illness victims to identify the producer of the contaminated food that sickened them makes viable tort claims extremely rare, which “significantly impedes the effectiveness of food safety liability insurance as a regulator of food safety.”³⁴ According to Cogan, food safety liability insurance premiums reflect the very low risk of being sued rather than the higher risk of harm to consumers, and such premiums cannot provide policyholders adequate incentive to exercise optimal care.³⁵ The signal such premiums send is likely to lead food companies to underestimate the risk that their operations will harm consumers and to underinvest in food safety.³⁶ Moreover, low litigation rates result in few insurance claims, which deprives insurance companies of the risk information necessary to establish optimal eligibility requirements, premium discounts, and coverage terms, and to provide useful risk management advice.³⁷

One point on which these competing accounts agree is that product contamination insurance, which covers a policyholder’s first-party losses arising out of recalls, creates incentives to mitigate the risk of foodborne illness from contaminated food.³⁸ Without such insurance, food producers, who face little prospect of being sued, may be reluctant to spend money on costly and time-consuming recalls of contaminated food. Cogan explains that recall coverage reduces the burden of recalling contaminated food, “thereby promoting more timely recalls when a supplier’s products pose risks to the public health and helping to remove dangerous products from the market.”³⁹

B. Beyond Economic Analysis

These accounts of insurance as a means of regulating food safety risk rely heavily on theoretical economic analysis. This Article adds a sociolegal perspective.⁴⁰ Economic analysis suggests that uncertainty undermines the capacity of insurance to efficiently price and effectively manage food safety risk. However,

34. John Aloysius Cogan, Jr., *The Uneasy Case for Food Safety Liability*, 81 BROOK. L. REV. 1495, 1502 (2016). For a detailed analysis of why tort claims arising out of foodborne illness are so rare, see *infra* Part III.

35. *Id.* at 1503, 1537–42. For a discussion of low litigation rates for foodborne illness, see JEAN C. BUZBY, PAUL D. FRENZEN & BARBARA RASCO, PRODUCT LIABILITY AND MICROBIAL FOODBORNE ILLNESS, AGRICULTURAL ECONOMIC REPORT NO. 799 (Econ. Rsch. Serv., U.S. Dep’t of Agric., ed., 2001), https://www.ers.usda.gov/webdocs/publications/41289/19018_aer799b.pdf?v=0. [https://perma.cc/54YH-QRE7].

36. Cogan, *supra* note 34, at 1542–44, 1550.

37. *Id.* at 1544–45.

38. First-party losses are losses suffered by the person named in the insurance policy. INTERNATIONAL RISK MANAGEMENT INSTITUTE, FIRST-PARTY INSURANCE (2021), <https://www.irmi.com/term/insurance-definitions/first-party-insurance#:~:text=First%2Dparty%20insurance%20that%20indemnifies,such%20as%20fire%20or%20explosion.>

39. Cogan, *supra* note 34, at 1551; see also Ben-Shahar & Logue, *supra* note 14, at 243–45; Jerry R. Skees, Aleta Botts & Kimberly A. Zeuli, *The Potential for Recall Insurance to Improve Food Safety*, 4 INT’L FOOD & AGRIBUSINESS MGMT. REV. 99 (2001).

40. For a general introduction to sociolegal theory, see STEWART MACAULAY & LAWRENCE M. FRIEDMAN, LAW IN ACTION: A SOCIO-LEGAL READER (2007).

the interviews conducted for this Article reveal that, in the absence of robust actuarial data, insurers manage risk by incentivizing farmers to comply with government regulations and conform to industry standards. Uncertainty may complicate the task of underwriters and limit what they can achieve, but it does not eliminate the value of insurance to risk regulation.

Indeed, new forms of insurance have always emerged in the absence of robust risk information.⁴¹ As sociologists Richard Ericson and Aaron Doyle put it, uncertainty is not an obstacle to insurance but rather the business of insurance. “[A] high degree of scientific and technical uncertainty permeates the insurance industry” but “insurers do not necessarily back off. . . . Rather, they respond with a range of creative and sometimes ingenious solutions.”⁴² As Tom Baker explains, “the ideal type of a fixed-in-advance, distribution of determinable risks does not match the reality of insurance markets.”⁴³

It is true that insurance does not currently generate sufficient actuarial data to reduce the uncertainty that plagues efforts by government regulators, industry technical committees, and academic experts to identify an optimal level of food safety. Nevertheless, insurance does contribute potentially powerful and pervasive incentives to encourage compliance with food safety standards developed by those groups. Insurance in this sector does not provide information to improve the effectiveness or efficiency of health and safety standards, but it does play a role in implementing them.

Appraisals of the role of insurance in reducing food safety risk need not rely exclusively on economic analysis. Researchers can also investigate underwriting practices. Based on semi-structured interviews with agents, underwriters, loss control specialists, claims adjusters, and product managers, this Article develops a thick description of how insurance professionals factor food safety risk into insurance coverage for fresh produce farmers.⁴⁴

C. Study Design

Before proceeding further, it is important to clarify the nature and scope of the interviews that support the analysis that follows. The author and two research assistants conducted semi-structured one-hour interviews with thirty-five insurance professionals between August 2013 and May 2020.⁴⁵ The interviews followed a set of common questions. Interviews were conducted by telephone and audio recorded, and then transcribed. The author coded and analyzed the transcripts using NVivo software.

41. ERICSON & DOYLE, *UNCERTAIN BUSINESS*, *supra* note 16, at 285 (noting that, in many different areas, “insurers have operated with little or no systematic knowledge of risk”).

42. *Id.* at 5.

43. Tom Baker, *Uncertainty > Risk: Lessons for Legal Thought from the Insurance Runoff Market*, 61 B.C. L. REV. 59, 65 (2020).

44. For details on sampling procedures for these interviews, see *infra* note 46 and accompanying text. For a definition of thick description, see Chris Drew, *5 Key Principles of “Thick Description” in Research (2020)*, HELPFUL PROFESSOR (undated), <https://helpfulprofessor.com/thick-description/> [https://perma.cc/47BD-TRY4].

45. The author conducted twenty-five interviews between August 2013 and December 2019. The research assistants conducted ten interviews between October 2019 and May 2020.

Interview subjects were identified through recommendations by prominent food safety experts, an internet search of agents and carriers that offer liability and contamination coverage for farms, and additional contacts obtained from initial subjects.⁴⁶ The author and his research assistants contacted more than 100 managers and senior executives at agencies, brokerages, insurance companies, and consulting firms by phone or email message or both, typically more than once. Most individuals did not respond to these contact attempts, some responded but explained that their firms did not work with fresh produce farms, and a few declined without providing any reason. The contact attempts yielded twenty-seven interviews with thirty-five individuals (some interviews included more than one interview subject). Interview subjects included six agents, four brokers, fourteen underwriting managers, two loss control experts, two claims managers, two product managers, one legal advisor, one data analyst, and three independent consultants. To complement the data collected from these interviews, this Article relies on content analysis of promotional materials for farm and agribusiness insurance, application and coverage forms, underwriting guidelines, and inspection checklists.

Interview subjects' years of experience doing insurance-related work ranged from one to forty-seven years. The thirty-five interview subjects averaged twenty-three years of experience, which was also the median number of years of experience in the group. Together, the group had a combined 836 years of experience.

Some interview subjects offered their services exclusively in regional markets, while others served a national client base. Those interview subjects who are employed by insurance carriers are from companies that collectively represented 28.5 percent of the U.S. market for farm owners multiple peril insurance in 2016, consisting of \$1.2 billion in direct premiums written.⁴⁷ Within leading fresh produce states, these carriers represented an even greater market share—for example, 75 percent in California and 80 percent in Florida.⁴⁸ The carriers also represented 27 percent of the U.S. market for commercial multiple peril insurance in 2018, as

46. The prominent food safety experts were themselves the subjects of semi-structured interviews as part of the author's research. LYTTON, *supra* note 3. The internet search produced a list of 358 contacts. Obtaining additional contacts from initial subjects is known as snowball sampling. Stephanie Glen, *Snowball Sampling: Definition, Advantages and Disadvantages*, STATISTICS HOW TO, <https://www.statisticshowto.com/snowball-sampling/>; see also JOHN LOFLAND ET AL., *ANALYZING SOCIAL SETTINGS: A GUIDE TO QUALITATIVE OBSERVATION AND ANALYSIS* 41–43 (4th ed. 2006).

47. Multiple peril insurance is insurance that covers a number of different causes of loss in a single policy. *Multi-peril Policy*, INSURANCEOPEDIA, <https://www.insuranceopedia.com/definition/421/multi-peril-policy> (Jan. 27, 2017). For data on the U.S. market for multiple peril insurance, see generally S&P GLOB. MKT. INTEL., *FARMOWNERS MULTIPLE PERIL 2016 INDUSTRY ANALYSIS* (2017), <https://www.aaic.com/wp-content/uploads/2018/04/Farmowners-Multiple-Peril-2016-Industry-Analysis-Report.pdf>. The report defines market share as “the percentage of a company's direct premiums written for specific lines of business within a specific area over the entire industry's direct premiums written with the same parameters.” *Id.* at 71. Direct premiums are “[p]remiums written including gross premiums booked, adjusted for additional or return premiums, on policies where the company is the primary or direct carrier, as it relates to a specific line of business.” *Id.*

48. *FARMOWNERS MULTIPLE PERIL 2016 INDUSTRY ANALYSIS*, *supra* note 47, at 10, 14. For data on fresh produce cultivation and sales by state, see *State Profiles of Produce Across America*, UNITED FRESH PRODUCE ASSOCIATION (2020), <https://www.unitedfresh.org/advocacy/state-profiles-of-produce-across-america/> [<https://perma.cc/6Z4L-UEJS>].

measured by direct premiums written, and included several leading product contamination carriers.⁴⁹

Many insurance professionals are reticent to discuss the details of underwriting practices within their companies for fear of disclosing proprietary information that could benefit competitors. All the interview subjects in this study consented to being quoted in this and other publications, but some requested that they and their companies remain anonymous. Consequently, the discussion below does not disclose the identities of any of the interview subjects or the companies with which they are associated. Having presented the theoretical framework and methodology for this study, Part II next situates insurance within the complex regulatory infrastructure that governs food safety.

II. FOOD SAFETY REGULATION IN THE FRESH PRODUCE SECTOR

Food safety regulation covers a broad array of risks, regulated activities, and regulators. The risks encompass dangers posed by microbial pathogens, food additives, pesticide exposure, antibiotics in animal feed, chemical contamination, foreign objects, and genetically modified organisms. The regulated activities span diverse industries, each with its own history, culture, modes of production, and methods of distribution.⁵⁰ The regulators include fifteen different federal agencies administering thirty-five different laws, as well as a much larger number of state and local entities.⁵¹ Moreover, all this government regulation is only one component of a larger infrastructure of food safety governance, which includes industry supply chain management and private food safety auditing, as well as civil liability and insurance underwriting. These various public and private governance efforts are highly interdependent.⁵² The food safety professionals involved in these efforts communicate, collaborate and, over the course of their careers, frequently migrate between jobs in government, industry, and academia.⁵³ This complex system of public and private entities engaged in regulatory governance is what scholars refer to as a “risk regime.”⁵⁴

49. See NAT'L ASS'N OF INS. COMM'RS, 2018 MARKET SHARE REPORTS FOR PROPERTY/CASUALTY GROUPS AND COMPANIES BY STATE AND COUNTRYWIDE 185 (2019), https://www.naic.org/prod_serv/MSR-PB-19.pdf [<https://perma.cc/VJ6D-7NS9>]; see also AON, 2019 EMERGING TRENDS IN PRODUCT RECALL AND CONTAMINATION RISK MANAGEMENT 15–18 (2019), <https://www.aon.com/forms/2018/2018-emerging-trends-product-recall.jsp>.

50. For detailed case studies of food safety regulation in various industries, including fluid milk, beef and poultry, fresh produce, and food service, see LYTTON, *supra* note 3.

51. See Lisa Heinzerling, *Divide and Confound: The Strange Allocation of U.S. Regulatory Authority Over Food*, in FOOD AND DRUG REGULATION IN AN ERA OF GLOBALIZED MARKETS 126 (Sam F. Halabi ed., 2015). See also RENÉE JOHNSON, CONG. RSCH. SERV., THE FEDERAL FOOD SAFETY SYSTEM: A PRIMER (2016). For an introduction to state and local regulation of food safety and ongoing coordination efforts, see *History of AFDO*, ASS'N OF FOOD AND DRUG OFFS., <http://www.afdo.org/History>.

52. For a detailed systems theory analysis of U.S. food safety governance, see LYTTON, *supra* note 3, at 21–22, 152–61, 236–38.

53. On professional networks in food safety governance, see LYTTON, *supra* note 3, at 22, 46, 49–51, 153, 155, 198–99, 237.

54. For an analysis of food safety governance as a risk regime, see Timothy D. Lytton, *Technical Standards in Health and Safety Regulation: Risk Regimes, the New Administrative Law, and Food Safety*

This Article drills down into one specific area within the U.S. food safety risk regime—the use of liability and product contamination insurance to reduce microbial contamination of fresh produce in farming operations. Detailed analysis of underwriting practices in this area will yield lessons about the role of insurance in reducing food safety risk beyond fresh produce and the use of insurance as a form of regulatory governance more generally. But first, Part II provides essential background concerning the regulation of food safety on farms that grow fresh produce.

A. Risks

Fresh produce presents several unique food safety challenges. It is typically grown outdoors, where it is exposed to many potential sources of contamination—including feces from livestock and wildlife, and microbial pathogens carried by irrigation water, organic fertilizers, agricultural and urban pollution, insects, fieldworkers, and harvesting equipment.⁵⁵ Risk management in the field is especially important because fresh produce is frequently consumed raw, which forecloses the use of cooking to kill harmful pathogens during processing or home preparation.⁵⁶

Governance, in CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW, VOL. 2: ADMINISTRATIVE LAW, COPYRIGHT, TRADEMARK, AND INTERNATIONAL LAW 45 (Jorge L. Contreras ed., 2019) [hereinafter Technical Standards]. On risk regimes more generally, see Jody Freeman, *Private Parties, Public Functions and the New Administrative Law*, 52 ADMIN. L. REV. 813, 816 (2000) (noting that “[c]ontemporary regulation might be best described as a regime of ‘mixed administration’ in which private actors and government share regulatory roles”); CHRISTOPHER HOOD ET AL., THE GOVERNMENT OF RISK: UNDERSTANDING RISK REGULATION REGIMES 9 (2001) (defining a risk regime as “the complex of institutional geography, rules, practice, and animating ideas that are associated with the regulation of a particular risk or hazard”).

55. Susan Bach & Pascal Delaquis, *The Origin and Spread of Human Pathogens in Fruit Production Systems*, in MICROBIAL SAFETY OF FRESH PRODUCE 45–46 (Xuetong Fan ed., 2009).

56. See generally *Food Safety: Current Challenges and New Ideas to Safeguard Consumers: Hearing on Examining Current Challenges and New Ideas to Safeguard Consumers Relating to Food Safety, Focusing on Foodborne Illnesses in General and the Response to the Recent Outbreak of E. Coli Infections Associated with Fresh Spinach Before the Committee on Health, Education, Labor, and Pensions*, 109th Cong. 36–37, 92; M. F. Lynch et al., *The Growing Burden of Foodborne Outbreaks Due to Contaminated Fresh Produce: Risks and Opportunities*, 137 EPIDEMIOLOGY & INFECTION 307 (2009). Washing fresh produce with chlorinated water reduces pathogen levels but is not 100 percent effective. Indeed, if not properly monitored, wash water can be a vehicle for cross contamination. See Julie Schmit, *Tainted Spinach: All Bacteria May Not Come Out in the Wash*, USA TODAY (Oct. 5, 2006), http://usatoday30.usatoday.com/money/industries/food/20061004spinachwashusat_x.htm [<https://perma.cc/9V52-T2CT>]; Roy Costa, *The Packinghouse: Safety and Uses of Process- Water*, FOOD SAFETY NEWS (Mar. 18, 2015), <https://www.foodsafetynews.com/2015/03/the-packinghouse-safety-and-uses-of-process-water/>; CTR. FOR PRODUCE SAFETY, KEY LEARNINGS 9 (2014), https://www.centerforproducesafety.org/amass/documents/document/210/CPS%20Key%20Learnings%20May%202014_FINAL2.pdf; *Study: Fresh Produce Bacteria Can Thrive Despite Routine Chlorine Sanitizing*, FOOD SAFETY MAG. (Apr. 24, 2018), <https://www.foodsafetymagazine.com/news/study-fresh-produce-bacteria-can-thrive-despite-routine-chlorine-sanitizing/?mobileFormat=false>. Irradiation also reduces pathogen levels. However, it has not been widely adopted because the necessary equipment is expensive, and companies fear that many consumers will not purchase irradiated food. MARION NESTLE, SAFE FOOD: THE POLITICS OF FOOD SAFETY 121–26 (2d ed. 2010); Xuetong Fan et al., *Irradiation of Fresh Fruits and Vegetables*, FOOD TECH. MAG. (Mar. 1, 2008), <https://www.ift.org/news-and-publications/food-technology-magazine/issues/2008/march/features/irradiation-of-fresh-fruits-and-vegetables>.

Produce that has been cut and processed—for example, in bagged salad mixes—carries additional risks. Cutting breaks the protective exterior skin of the plant and allows pathogens to infiltrate stalks and leaves, where they are harder to remove.⁵⁷ Cutting also releases cellular fluids that provide a nutritive medium that can foster pathogen growth.⁵⁸ The cutting, washing, and mixing of packaged items exposes them to additional handling, thereby multiplying opportunities for contamination.⁵⁹ The aggregation of batches from different farms during processing increases the risk of cross contamination and can disperse a single contaminated item, such as a spinach plant or head of lettuce, into many finished products.⁶⁰

B. Standards

Food safety standards governing fresh produce take diverse forms and emanate from many sources.⁶¹ Standards take the form of industry guidelines, agency guidance, product specifications, private auditing criteria, marketing agreements, and regulations. The entities that promulgate these standards include trade associations, government agencies, retailers, and standards development organizations. Although there is some variation between different sets of standards, extensive borrowing among these entities produces considerable overlap. Each new set of standards is typically modeled on some preexisting set and slightly modified. Periodic foodborne illness outbreaks traced back to fresh produce frequently prompt these revisions.⁶²

During the past two decades, the standards have evolved from vague voluntary guidelines to detailed binding rules. However, much of the additional specification in the newer standards is unsupported by scientific evidence.⁶³ The following thumbnail history of food safety standards for fresh produce describes how the push for mandates and metrics has advanced despite the absence of scientific evidence to justify them.

57. A. Bryan Endres & Nicholas R. Johnson, *Integrating Stakeholder Roles in Food Production, Marketing, and Safety Systems: An Evolving Multi-Jurisdictional Approach*, 26 J. OF ENV'T'L L. & LITIG. 29, 53–54 (2011).

58. *Id.* at 53; Elliot T. Ryser et al., *Internalization of Pathogens in Produce*, in MICROBIAL SAFETY OF FRESH PRODUCE 55–80 (Xuetong Fan ed., 2009).

59. Endres & Johnson, *supra* note 57, at 53–54.

60. *Id.*

61. For a more detailed account of the overview provided in this and the next paragraph, see LYTTON, *supra* note 3, at 121–61.

62. For an analysis of how foodborne illness outbreaks function as focusing events that prompt food safety reforms, see LYTTON, *supra* note 3, at 113–17, 236.

63. See LYTTON, *supra* note 3, at 162–69 (discussing the lack of available evidence to support any claims about the impact of food safety standards governing fresh produce on foodborne illness rates and reviewing evidence of increased expenditures on food safety measures among farmers and increased rates of regulatory compliance and standards conformity).

1. Voluntary Guidelines and Nonbinding Guidance

Food safety concerns about fresh produce are relatively recent.⁶⁴ A 1985 National Academies report asserted that “raw fruits and vegetables are not common causes of foodborne illness in the United States,” and that “there is little use for microbiological [safety standards] for fresh fruits and vegetables at the present time.”⁶⁵ At that time, the U.S. Food and Drug Administration (FDA) had long possessed broad legal authority under the Federal Food, Drug and Cosmetic Act to prevent adulteration of any type of food sold in interstate commerce, but it had never developed implementing regulations for fresh produce as it had for processed foods.⁶⁶

Complacency about the safety of fresh produce ended when, in the mid-1990s, public health officials began identifying contaminated fresh produce as the source of foodborne illness outbreaks. Increased consumption of raw produce as part of changing dietary patterns that favored fresh salads over cooked vegetables likely contributed to a rise in outbreaks.⁶⁷ Simultaneously, improvements in foodborne illness surveillance and tracing enhanced the ability of public health officials to connect outbreaks to specific products and companies.⁶⁸

In response to growing concern about the safety of fresh produce, several trade associations assembled technical committees composed of industry experts, academics, and government officials.⁶⁹ In 1997, these trade associations published two sets of similar voluntary guidelines that identified five potential sources of contamination in growing fields: agricultural water quality, soil amendments, animal intrusion, worker hygiene, and harvesting equipment.⁷⁰ These early guidelines directed attention to potential problem areas but did not specify metrics or provide detailed procedures for reducing risk. For example, one set of guidelines on irrigation water encouraged growers “to identify and review the source of water” and suggested that “[t]he water may be tested for contaminants on a periodic basis. The frequency of the testing may be determined by the water source. Testing may be considered for

64. This and the next paragraph are drawn from Lytton, *Technical Standards*, *supra* note 54, at 47. For a more detailed account of the history of food safety standards in the fresh produce sector, see LYTTON, *supra* note 3, at 121–47.

65. NAT’L ACAD. OF SCIS., AN EVALUATION OF THE ROLE OF MICROBIOLOGICAL CRITERIA FOR FOODS AND FOOD INGREDIENTS, 257–58 (1985).

66. See VANESSA K. BURROWS, CONG. RSCH. SERV., FDA AUTHORITY TO REGULATE ON-FARM ACTIVITY (2008); Varun Shekhar, *Produce Exceptionalism: Examining the Leafy Greens Marketing Agreement and Its Ability to Improve Food Safety*, 6 J. FOOD L. & POLICY 267 (2010).

67. Matthew Kohnke, Note, *Reeling in a Rogue Industry: Lethal E. Coli in California’s Leafy Green Produce & the Regulatory Response*, 12 DRAKE J. OF AGRIC. L. 493 (2007).

68. U.S. FOOD & DRUG ADMIN., GUIDANCE FOR INDUSTRY: GUIDE TO MINIMIZE MICROBIAL FOOD SAFETY HAZARDS OF FRESH-CUT FRUITS AND VEGETABLES (2008).

69. Lytton, *supra* note 54, at 47. For a list of participants and their institutional affiliations, see INT’L FRESH-CUT PRODUCE ASS’N & W. GROWERS ASS’N, VOLUNTARY FOOD SAFETY GUIDELINES FOR FRESH PRODUCE: VOLUNTARY GUIDELINES FOR MINIMIZING MICROBIAL CONTAMINATION IN FRESH PRODUCE iv–v (1997); UNITED FRESH FRUIT & VEGETABLE ASS’N, INDUSTRYWIDE GUIDANCE TO MINIMIZE MICROBIOLOGICAL FOOD SAFETY RISKS FOR PRODUCE i (1997).

70. INT’L FRESH-CUT PRODUCE ASS’N, *supra* note 69, at 1–3; UNITED FRESH FRUIT & VEGETABLE ASS’N, *supra* note 69, at 5–14.

E. coli and total coliforms.”⁷¹ (Although not harmful to humans, generic *E. coli* and most coliforms are indicators of fecal contamination, which may be accompanied by pathogenic bacteria.)⁷² The authors of the guidelines readily admitted a lack of scientific evidence to support more specific standards or detailed testing procedures. The introduction to one set of guidelines acknowledged that

There are data gaps in understanding the sources and significance of microbial hazards as well as practices to minimize them. Consequently, it is not well understood what specific impact water, manure or employees may have in contributing to foodborne disease.⁷³

The following year, the FDA and U.S. Department of Agriculture (USDA) jointly issued a nonbinding guidance document titled, *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables*, which borrowed heavily from the industry association guidelines, as well as from another set of guidelines concurrently developed by researchers at Cornell University.⁷⁴ Like its industry and academic predecessors, the federal government’s guidance highlighted areas of concern but lacked specific metrics or detailed procedures. For example, the guidance stated that agricultural “water quality [should be] adequate for its intended use” and defined adequate as “that which is needed to accomplish the intended purpose in keeping with good practice.”⁷⁵ The guidance advised that “where water quality is unknown or cannot be controlled, growers should use other good agricultural practices to minimize the risk of contamination,” such as “protecting surface waters, wells, and pump areas from uncontrolled livestock or wildlife access to limit the extent of fecal contamination” and employing “soil and water conservation practices such as grass/sod waterways, diversion berms, runoff control structures, and vegetative buffer areas” to “help prevent polluted runoff water from contaminating agricultural water sources and produce crops.”⁷⁶ The guidance offered

71. INT’L FRESH-CUT PRODUCE ASS’N, *supra* note 69, at 2. For similarly vague guidelines on agricultural water quality, see UNITED FRESH FRUIT & VEGETABLE ASS’N, *supra* note 69, at 8.

72. *Frequently Asked Questions About Coliforms in Drinking Water*, CTRS. FOR DISEASE CONTROL & PREVENTION (Mar. 2013), <https://www.cdc.gov/healthywater/emergency/dwa-comm-toolbox/before/tools/faq-coliforms-drinking-water.docx>.

73. INT’L FRESH-CUT PRODUCE ASS’N, *supra* note 69, at iii; *see also* UNITED FRESH FRUIT & VEGETABLE ASS’N, *supra* note 69, at 4 (acknowledging that “further research is essential to understand more fully the risks and effectiveness of intervention measures”).

74. U.S. FOOD & DRUG ADMIN., GUIDANCE FOR INDUSTRY: GUIDE TO MINIMIZE MICROBIAL FOOD SAFETY HAZARDS FOR FRESH FRUITS AND VEGETABLES (1998) [hereinafter *FDA 1998 Guidance*]; ANUSUYA RANGARAJAN, MARVIN P. PRITTS, STEVE REINERS, & LAURA PEDERSEN, FOOD SAFETY BEGINS ON THE FARM: REDUCE MICROBIAL CONTAMINATION WITH GOOD AGRICULTURAL PRACTICES (rev. 2000) (guidelines published in a tri-fold pamphlet by the Cornell University GAPs Project, Department of Food Science). This pamphlet was first published in 1997. For further details on dating the first edition, see LYTTON, *supra* note 3, at 295 n. 13. For a more detailed account of the drafting of the FDA/USDA guidance, see LYTTON, *supra* note 3, at 124.

75. *FDA 1998 Guidance*, *supra* note 74, at 6, 13.

76. *Id.* at 10, 12. The good agricultural practices recommended by the FDA/USDA guidance are commonly referred by the acronym “GAPs.” Robert B. Gravani, *The Role of Good Agricultural Practices in Produce Safety*, in MICROBIAL SAFETY OF FRESH PRODUCE 108 (Xuetong Fan, Brendan A. Niemira, Christopher J. Doona, Florence E. Feeherry & Robert B. Gravani eds., 2009).

no details on how to protect water sources from animal intrusion or specifications for earthworks to divert runoff water. Similarly, the guidance stated that “[g]rowers may elect to test their water supply for microbial contamination” but, as one commentator points out, the guidance did not specify “what to test for, what type of test to utilize, where to test, what the frequency of tests should be or any parameters upon which to evaluate the results of [the] tests.”⁷⁷

As did the industry guidelines, the government’s guidance highlighted the inadequacy of scientific knowledge at the time and the need for additional research. The FDA and USDA explained that “[t]he scientific basis for reducing or eliminating pathogens in an agricultural setting is evolving and not yet complete.”⁷⁸ For example, they cautioned that “[t]here are a number of gaps in the science upon which to base a microbial testing program for agricultural water[,] and microbial testing of agricultural water may be of limited usefulness.”⁷⁹

Concern over microbial contamination of fresh produce grew in the years following publication of the industry guidelines and government guidance. Frustrated, in 2004, the FDA issued a letter to fresh lettuce and tomato growers complaining that, since 1996, the agency had “responded to [fourteen] outbreaks of foodborne illness for which fresh lettuce or fresh tomatoes were the confirmed or suspected vehicle[s]” causing “approximately 859 reported cases of illness” caused by *E. coli* O157:H7, *Salmonella*, *Cyclospora*, and Hepatitis A virus.⁸⁰ In a subsequent 2005 letter to California leafy green growers, the agency demanded that the industry develop a “comprehensive, collaborative plan to address the issue of *E. coli* O157:H7 in lettuce” and threatened product seizures and prosecutions if more was not done to clean up the state’s lettuce fields.⁸¹

These ongoing outbreaks also worried the retail businesses that sold and served contaminated fresh produce to their customers. Eager to protect their brands from the reputational damage of outbreaks, supermarkets, restaurant chains, and food service companies incorporated food safety standards into the product specifications they required from their suppliers. In addition, retail trade associations launched independent standard-setting entities to develop industrywide food safety standards, known as “schemes.” Well-established standards organizations, such as the Underwriters’ Laboratories (UL) and the International Organization for Standardization (ISO), also developed food safety standards. Retailers insisted that their fresh produce suppliers obtain food safety audits and earn specified minimum scores or ratings. Private auditors offered a menu of options based on different standards, including, in some cases, branded audits using an audit firm’s own proprietary standards. As new standards and audit requirements proliferated, growers—subject to multiple audits to please different buyers—complained of

77. *FDA 1998 Guidance*, *supra* note 74, at 12; Endres & Johnson, *supra* note 57, at 61–62 (quoting a comment made during a public hearing convened by the USDA on food safety standards for leafy greens cultivation).

78. *FDA 1998 Guidance*, *supra* note 74, at 3.

79. *Id.* at 12.

80. U.S. Food & Drug Admin., Letter to Firms that Grow, Pack, or Ship Fresh Lettuce and Fresh Tomatoes (Feb. 5, 2004).

81. U.S. Food & Drug Admin., Letter to California Firms that Grow, Pack, Process, or Ship Fresh and Fresh-cut Lettuce (Nov. 4, 2005).

“audit fatigue.” In response, growers’ trade associations attempted to develop a single set of standards, but the resulting “harmonized” standards were not universally accepted and, in the end, added to the many options available to retailers.⁸²

2. *Marketing Agreements and Regulatory Mandates*

In 2006, contaminated spinach from the Salinas Valley caused one of the nation’s most devastating outbreaks, responsible for more than two hundred reported cases of illness in twenty-six states, one hundred and three victims hospitalized, thirty-one crippled by kidney failure, and three dead.⁸³ Government advisories prompted nervous retailers and frightened consumers to avoid all leafy greens. According to one estimate, California growers suffered nearly \$100 million in losses as a result.⁸⁴

To reassure retailers and consumers, senior food safety managers at leading fresh produce processing companies convened a technical committee of stakeholders from industry, government, and academia to develop detailed food safety standards for farming leafy greens.⁸⁵ The result was a marketing agreement among leafy greens handlers—firms that process or distribute leafy greens—to buy only from farms that pass periodic food safety audits based on specific “metrics” for water quality, soil amendments, animal intrusion, worker hygiene, and harvesting equipment sanitation.⁸⁶

The founders of the California Leafy Green Product Handler Marketing Agreement (LGMA) found insufficient scientific literature to justify specific metrics, so they borrowed relevant criteria from other regulatory areas. Where the LGMA founders could identify no such relevant metrics, they relied on consensus among industry representatives or other stakeholders.⁸⁷ For example, the LGMA founders could not identify scientific studies that would support quantitative metrics for preharvest agricultural water quality, so they adopted an established metric used by the Environmental Protection Agency (EPA) for regulating recreational water quality.⁸⁸

In relying on the EPA’s recreational water quality criteria, the LGMA founders were self-conscious about the incomplete scientific justification for their new leafy green food safety metrics. David Gombas, a microbiologist who directed food safety efforts at a leading trade association at the time recalls:

82. See LYTTON, *supra* note 3, at 127–33 (discussing the rise and proliferation of retail buyer food safety specifications, independent food safety schemes, branded audits, and harmonization attempts).

83. Michelle Meadows, *How the FDA Works to Keep Produce Safe*, FDA CONSUMER, Mar.–Apr. 2007, at 12, 13. For a detailed account of the outbreak, see LYTTON, *supra* note 3, at 118–20.

84. *Food Safety: Current Challenges and New Ideas to Safeguard Consumers: Hearing of the Comm. on Health, Educ., Lab., and Pensions*, 109th Cong. 71 (2006) (testimony of Robert Whitaker).

85. LYTTON, *supra* note 3, at 133–34, 254–55.

86. *Id.* at 134–38. For the current LGMA metrics, see *Food Safety Program*, CALIFORNIA LGMA (2021), <https://lgma.ca.gov/food-safety-program>. For an introduction to marketing agreements, see G.B. Wood, *Marketing Agreements and Orders—Without Production Controls*, INCREASING UNDERSTANDING OF PUBLIC PROBLEMS AND POLICIES, 1961, at 69, 69–70. For further details on the California Leafy Green Produce Handler Marketing Agreement, see LYTTON, *supra* note 3, at 133–41, 176, 253–56.

87. Lytton, *supra* note 54, at 51–52.

88. TREVOR V. SUSLOW, PRODUCE SAFETY PROJECT ISSUE BRIEF: STANDARDS FOR IRRIGATION AND FOLIAR CONTACT WATER 6 (2009).

Everyone was looking around for an answer to the question “What is water of adequate quality?” and there was no science to come up with a number. So, the closest thing that they could come up with was, “Well the EPA is saying that recreational water standards are safe enough to swim in—and if it’s safe enough to swim in, it must be safe enough to irrigate with.” . . . People wanted numbers, hard numbers. The problem was that there was no science—no science to support how many, how far, how often. So, we used the best available science, and, in many regards, we just simply guessed. If you look at the original leafy greens metrics, they explain that we are using these numbers as a best estimation, in the sincere hope that science would provide better answers in the future.⁸⁹

Robert Whitaker, who at the time was vice president for food safety at a major grower and was a principal architect of the LGMA, similarly recalls:

There wasn’t good science in place at the time. So, the measure that was adopted was basically the recreational water standard the EPA had put in place. The feeling was, “It’s really no more scientific than this: that if water is good enough quality to allow someone to swim in it, then it ought to be good enough quality to irrigate a crop with.” . . . In 2006 and 2007, when those metrics were being developed, that’s what the decision was based on. We didn’t have data.⁹⁰

Trevor Suslow, a plant pathologist who worked as a researcher for twenty-three years at the University of California-Davis, where he became a leading expert on the contamination of fresh produce by waterborne pathogens, and who provided technical advice to the LGMA founders, opined in 2010: “The choice to adopt EPA recreational-water criteria at the time, and especially in retrospect, did not appear to be a sound, science-based selection for direct application to irrigation water; however, in the absence of a publicly available database from extensive testing, it was deemed the best option.”⁹¹

In 2011, President Obama signed the Food Safety Modernization Act (FSMA), which requires the FDA to “establish science-based minimum standards for the safe production and harvesting” of fresh produce “related to soil amendments, hygiene, packaging, temperature controls, animals in the growing area, and water.”⁹² The FDA published these regulations, referred to collectively as the Produce Safety

89. Telephone interview with David Gombas (June 6, 2016).

90. Telephone interview with Robert Whitaker (June 1, 2016).

91. SUSLOW, *supra* note 88, at 9; *see also* JOHN RAVENSCROFT & TREVOR V. SUSLOW, RISK-BASED APPROACH TO IDENTIFY HAZARDS, PROVIDE CONTEXT FOR MONITORING AND INFORM DECISION MAKING AND KISS: THE MERITS OF A SIMPLIFIED APPROACH TO AGRICULTURAL WATER TESTING (2018) (emphasizing that “[t]here is no justification for a strict quantitative standard” for agricultural water); telephone interview with Trevor Suslow (June 1, 2016).

92. FDA Food Safety Modernization Act, Pub. L. No. 111-353, § 419(a)(1)(A), (a)(3)(B), 124 Stat. 3885, 3899–90 (2011).

Rule, in 2015 and began implementing them in 2019.⁹³ The regulations borrow extensively from the LGMA metrics for leafy greens and apply similar metrics to fresh produce generally. For example, like the LGMA, the Produce Safety Rule adopted the EPA's recreational water quality criteria as the standard for preharvest agricultural water.⁹⁴

Industry experts, academic researchers, and government officials are steadily developing increasing scientific evidence to demonstrate that preharvest water is a source of pathogenic microbial contamination of fresh produce crops and that certain practices—such as using ground water instead of surface water, or drip irrigation rather than flood irrigation—can reduce microbial loads on plants in the field.⁹⁵ However, there is still insufficient scientific evidence to support specific quantitative microbial thresholds or water testing protocols. This assessment is consistent with the published findings of leading academic, industry, and government agricultural water quality experts.⁹⁶

When industry leaders complained about the lack of scientific evidence to support the FDA's quantitative water quality metrics, the agency agreed and delayed implementation until between 2022 and 2024, depending on the size of the farm.⁹⁷ To be fair, the prospect of financial ruin prompted the LGMA to develop standards beyond what science could support, and the FDA did the same pursuant to a legislative deadline.⁹⁸ The takeaway for the purposes of this Article is that the specificity of food safety standards in the fresh produce sector relies heavily on educated guesses by experts unsupported by quantitative data.

93. Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 80 Fed. Reg. 74,353 (Nov. 27, 2015) (to be codified at 21 C.F.R. pt. 11, 16, 112); see generally, *FSMA Final Rule on Produce Safety*, U.S. FOOD & DRUG ADMINISTRATION, <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety> [<https://perma.cc/L2Y2-4E2X>] (last updated Dec. 2, 2021) (detailing compliance dates); Cookson Beecher, *Food-Safety Inspectors Begin Visits to Produce Farms, Packing Houses*, FOOD SAFETY NEWS (Aug. 5, 2019), <https://www.foodsafetynews.com/2019/08/food-safety-inspectors-begin-visits-to-produce-farms-packing-houses/> [<https://perma.cc/F6VD-638J>]; Lytton, *supra* note 3, at 141–47 (describing history and general overview of the Produce Safety Rule).

94. Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 80 Fed. Reg. at 74, 441–42.

95. See, e.g., *Draft, Romaine Task Force Dallas, TX, February 13-14, 2019, Meeting Notes/Summary*, PRODUCE MARKETING ASSOCIATION (2019), <https://www.pma.com/-/media/pma-files/food-safety/romaine-task-force-meeting-summaryrecommendations-4119.pdf?la=en> [<https://perma.cc/QSY3-LEZD>].

96. See, e.g., SUSLOW, *supra* note 88; Jennifer McEntire & Jim Gorny, *Fixing FSMA's Ag Water Requirements*, FOOD SAFETY MAG. (Aug. 15, 2017), <https://www.foodsafetymagazine.com/magazine-archive1/augustseptember-2017/fixing-fsmae28099s-ag-water-requirements/> [<https://perma.cc/NZ4X-HF6D>]; Carr, *supra* note 2, at 9.

97. *FDA Finalizes New Compliance Dates for Agricultural Water Requirements*, U.S. FOOD & DRUG ADMIN. (Mar. 15, 2019), <https://www.fda.gov/food/cfsan-constituent-updates/fda-finalizes-new-compliance-dates-agricultural-water-requirements> [<https://perma.cc/PLL9-XRVJ>].

98. See generally LYTTON, *supra* note 3, at 118–20, 133–35, 253–56 (discussing pressures on leafy green producers to develop specific food safety metrics); Food Safety Modernization Act, Pub. L. No. 111-353, §105 (a)(1)(A), (b)(1), 124 Stat. 3885, 3899, 3901 (setting statutory deadlines for proposed and final produce safety rules); LYTTON, *supra* note 3, at 146 (discussing FDA's delay in publishing the produce safety rules and subsequent litigation).

C. Oversight

As is the case with developing food safety standards, monitoring adherence to them involves a mix of government and private efforts. Government oversight is limited by resource constraints. Private oversight is compromised by conflict of interest. These shortcomings, and the incentive structure of insurance, suggest that liability and product contamination coverage could, in theory, play a transformative role in regulatory compliance and standards conformity in the fresh produce sector.

1. Government Inspections

Resource constraints limit the role of government agencies in overseeing food safety practices on farms that grow fresh produce. The FDA has had jurisdiction over food safety on farms since passage of the Federal Food, Drug, and Cosmetic Act of 1938, but the agency has never conducted routine inspections of farms.⁹⁹ The USDA's Agricultural Marketing Service (AMS) works with state agriculture departments to provide voluntary food safety audits for fresh produce growers and handlers on a fee-for-service basis.¹⁰⁰ In 2016, the AMS conducted 4224 such audits, but it is unknown how many of these were farm audits.¹⁰¹ USDA-trained California Department of Food and Agriculture inspectors conduct an additional 300 California LGMA compliance audits each year.¹⁰² These voluntary, fee-for-service government inspections cover fewer than 4 percent of the 120,000 U.S. farms that grow fresh produce intended for retail sale to consumers.¹⁰³

As part of its efforts to implement the Produce Safety Rule, the FDA has partnered with the AMS, state agriculture departments, academic institutions, and industry associations to develop and provide training programs for farmers and state inspectors.¹⁰⁴ The FDA expects that most on-farm government inspections will be performed by state agencies with financial and technical support from the FDA and

99. Burrows, *supra* note 66, at 3.

100. *Fruits, Vegetables & Specialty Crop Audits*, U.S. DEP'T OF AGRIC., <https://www.ams.usda.gov/services/auditing/fruits>.

101. E-mail from Ken Petersen, Chief Audit Services Branch, Specialty Crops Inspection Div., Agric. Mktg. Serv., USDA, to author (May 11, 2017).

102. CAL. LEAFY GREENS MKTG. AGREEMENT, ANNUAL REPORT: APRIL 2018–MARCH 2019 1 (2019), <https://lgma-assets.sfo2.digitaloceanspaces.com/downloads/2018.2019-CA-LGMA-Annual-Report.pdf> [<https://perma.cc/2C2R-DFS7>].

103. *Standards for Growing RIA*, *supra* note 10, at 40 (estimating the number of U.S. farms that grow fresh produce intended for retail sale to consumers).

104. *See generally FDA-State Produce Safety Implementation Cooperative Agreement Program*, U.S. FOOD & DRUG ADMIN., <https://www.fda.gov/federal-state-local-tribal-and-territorial-officials/grants-and-cooperative-agreements/state-produce-implementation-cooperative-agreement-program-cap> (last updated Jan. 18, 2022) [<https://perma.cc/TTQ3-MZ9Y>]; *FDA and USDA Announce Key Step to Advance Collaborative Efforts to Streamline Produce Safety Requirements for Farmers*, U.S. FOOD & DRUG ADMIN. (Jun. 5, 2018), <https://www.fda.gov/news-events/press-announcements/fda-and-usda-announce-key-step-advance-collaborative-efforts-streamline-produce-safety-requirements> [<https://perma.cc/N3MB-RWSY>]; Jennifer Dougherty & Ken Petersen, *The Produce Safety Alliance-A Public/Private Partnership for the Produce Industry*, U.S. DEP'T OF AGRIC., <https://www.ams.usda.gov/content/produce-safety-alliance-publicprivate-partnership-produce-industry> [<https://perma.cc/6UMR-2B5T>].

the AMS.¹⁰⁵ Some states reportedly initiated Produce Safety Rule inspections in the summer of 2019.¹⁰⁶ The FDA and state agencies expect to prioritize inspections of high risk farms, meaning those with a history of food safety problems or that are especially vulnerable to contamination due to various features of their operations.¹⁰⁷

The extent of routine government inspections in the future and their capacity to ensure compliance remains to be seen.¹⁰⁸ Two decades of sustained criticism of the FDA's food safety inspection efforts by the Department of Health and Human Services Inspector General and the Government Accountability Office suggest that the results of the new program may fall short of the agency's aspirations.¹⁰⁹ For example, a 2017 review of the FDA's inspection program for food production facilities by the Department of Health and Human Services Office of Inspector General found:

FDA did not always take action when it uncovered significant inspection violations. . . . When it did take action, it commonly relied on facilities to voluntarily correct the violations. Also, it

105. Beecher, *supra* note 93.

106. *Id.*

107. *Id.* Examples of features of a growing operation that might lead the FDA or a state agency to categorize it as high risk include proximity to animal farming operations, the use of organic fertilizers derived from manure, and watersheds likely to convey contaminated runoff water from areas populated by domestic or wild animals. See NAT'L ASS'N OF STATE DEP'TS OF AGRIC. FOOD SAFETY MODERNIZATION ACT TECHNICAL WORKING GROUP, NASDA MODEL PRODUCE SAFETY IMPLEMENTATION FRAMEWORK 71 (Feb. 22, 2019), https://s3.amazonaws.com/nasda2/media/NASDA-Model-Produce-Safety-Implementation-Framework_2-22-2019.pdf?mtime=20190906154302 [<https://perma.cc/DPM4-V4FU>].

108. See *States and FDA Prepare for On-Farm Inspections*, THE PACKER (Feb. 22, 2017), [<https://perma.cc/8B8K-R4FB>] (quoting leading experts who question the sufficiency of government resources to conduct routine food safety inspections of produce growing operations).

109. See, e.g., DEP'T OF HEALTH AND HUMAN SERVS. OFFICE OF THE INSPECTOR GEN., OEI-02-14-00420, CHALLENGES REMAIN IN FDA'S INSPECTION OF DOMESTIC FOOD FACILITIES (2017) [hereinafter CHALLENGES REMAIN]; U.S. GOV'T ACCOUNTABILITY OFF., GAO-15-183, FOOD SAFETY: ADDITIONAL ACTIONS NEEDED TO HELP FDA'S FOREIGN OFFICES ENSURE SAFETY OF IMPORTED FOOD (2015); U.S. GOV'T ACCOUNTABILITY OFF., GAO-12-933, FOOD SAFETY: FDA CAN BETTER OVERSEE FOOD IMPORTS BY ASSESSING AND LEVERAGING OTHER COUNTRIES' OVERSIGHT RESOURCES (2012); DEP'T OF HEALTH AND HUMAN SERVS. OFFICE OF THE INSPECTOR GEN., OEI-02-09-00430, VULNERABILITIES IN FDA'S OVERSIGHT OF STATE FOOD FACILITY INSPECTIONS (2011); DEP'T OF HEALTH AND HUMAN SERVS. OFFICE OF THE INSPECTOR GEN., OEI-02-08-00080, FDA INSPECTIONS OF DOMESTIC FOOD FACILITIES (2010); DEP'T OF HEALTH AND HUMAN SERVS. OFFICE OF THE INSPECTOR GEN., OEI-02-06-00210, TRACEABILITY IN THE FOOD SUPPLY CHAIN (2009); U.S. GOV'T ACCOUNTABILITY OFF., GAO-09-873, FOOD SAFETY: AGENCIES NEED TO ADDRESS GAPS IN ENFORCEMENT AND COLLABORATION TO ENHANCE THE SAFETY OF IMPORTED FOOD (2009); U.S. GOV'T ACCOUNTABILITY OFF., GAO-08-435T, FEDERAL OVERSIGHT OF FOOD SAFETY: FDA'S FOOD PROTECTION PLAN PROPOSES POSITIVE FIRST STEPS, BUT CAPACITY TO CARRY THEM OUT IS CRITICAL (2008); U.S. GOV'T ACCOUNTABILITY OFF., GAO-08-1047, FOOD SAFETY: IMPROVEMENTS NEEDED IN FDA OVERSIGHT OF FRESH PRODUCE (2008); U.S. GOV'T ACCOUNTABILITY OFF., GAO-08-909T, FEDERAL OVERSIGHT OF FOOD SAFETY: FDA HAS PROVIDED FEW DETAILS ON THE RESOURCES AND STRATEGIES NEEDED TO IMPLEMENT ITS FOOD PROTECTION PLAN (2008); U.S. GOV'T ACCOUNTABILITY OFF., GAO-05-213, OVERSIGHT OF FOOD SAFETY ACTIVITIES; FEDERAL AGENCIES SHOULD PURSUE OPPORTUNITIES TO REDUCE OVERLAP AND BETTER LEVERAGE RESOURCES (2005); DEP'T OF HEALTH AND HUMAN SERVS. OFFICE OF THE INSPECTOR GEN., OEI-01-98-00400, FDA OVERSIGHT OF STATE FOOD FIRM INSPECTIONS: A CALL FOR GREATER ACCOUNTABILITY (2000).

rarely took advantage of the new administrative tools provided by FSMA. Moreover, FDA's actions were not always timely nor did they always result in the correction of these violations. FDA consistently failed to conduct timely followup inspections to ensure that facilities corrected significant inspection violations. For almost half of the significant inspection violations, FDA did not conduct a followup inspection within 1 year; for 17 percent of the significant inspection violations, FDA did not conduct a followup inspection of the facility at all.¹¹⁰

Moreover, the FDA's new produce safety regulations do not apply to farms with annual produce sales less than \$500,000 that market directly to consumers or to local restaurants, food service operations, or grocery stores.¹¹¹ According to the FDA, more than 93 percent of U.S. farms fall below this threshold of \$500,000 in annual sales.¹¹² This leaves consumers who eat locally grown fresh produce largely unprotected by the federal government's new produce safety regime.¹¹³ A recent study by the University of California-Davis found generic *E. coli*—an indicator of fecal contamination—on one third of fresh produce samples sold at Northern California farmers markets that were certified by local environmental health agencies to ensure compliance with state health regulations for food facilities.¹¹⁴

110. CHALLENGES REMAIN, *supra* note 109, at i.

111. Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 80 Fed. Reg. at 74,356 (defining local for the purposes of this exemption as “[i]n the same State or the same Indian reservation as the farm [that produced the food] or not more than 275 miles away”); *see also* Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 21 C.F.R. §§ 112.3, 112.5.

112. Gregory Astill, et. al., Econ. Research Serv., U.S. Dep’t Agric., EIB Bull. No. 194, BEFORE IMPLEMENTATION OF THE FOOD SAFETY MODERNIZATION ACT’S PRODUCE RULE: A SURVEY OF U.S. PRODUCE GROWERS 48 (2018) (stating that, according to the FDA’s Final Regulatory Impact Analysis, 6.8 percent of farms that grow produce have sales of at least \$500,000 and, according to the USDA’s Produce Grower Food Safety Practices Surveys of 2015 and 2016, 29.8 percent of farms that grow fresh produce have sales of at least \$500,000); *see also* CHRISTINE WHITT, JAMES M. MACDONALD & JESSICA E. TODD, ECON. RESEARCH SERV., U.S. DEP’T AGRIC., EIB BULL. NO. 214, AMERICA’S DIVERSE FAMILY FARMS: 2019 EDITION 3, 21 (2019) (stating that farms with gross cash farm income below \$350,000 account for 90 percent of the U.S. farm count and operate almost half of the farmland).

113. Farms with between \$25,000 and \$500,000 in average annual sales are eligible for a “qualified exemption,” which imposes recordkeeping and reporting requirements, but not compliance with the Produce Safety Rule’s standards for water quality, soil amendment, animal intrusion, worker hygiene, and equipment sanitation. U.S. FOOD & DRUG ADMIN., STANDARDS FOR PRODUCE SAFETY: COVERAGE AND EXEMPTIONS/EXCLUSIONS FOR 21 PART 112 (Nov. 13, 2015), <https://www.fda.gov/media/94332/download> [<https://perma.cc/6YCY-WZSN>]; *see Has Our Food Become Safer in the Last 10 Years?*, CIVIL EATS (May 13, 2019), <https://civileats.com/2019/05/13/has-our-food-become-safer-in-the-last-10-years/> [<https://perma.cc/U523-AVAT>] (citing one small-farm advocate calling for “right-sized regulation, or scale-sensitive regulation”).

114. Dan Flynn, *Farmers Market Fresh Produce Often Comes with a Fecal Load Included in Price*, FOOD SAFETY NEWS (Nov. 18, 2020), <https://www.foodsafetynews.com/2020/11/farmers-market-fresh-produce-often-comes-with-a-fecal-load-included-in-price/> [<https://perma.cc/4M7N-MYAG>]; *see also* Joshua A. Scheinberg et al., *A Comprehensive Needs Assessment of Food Safety Practices of Farmers’ Market Vendors in Pennsylvania Using Direct Concealed Observations, Self-Reported Surveys, and State Sanitarian Surveys*, 38 Food Prot. Trends 421 (2018) [<https://perma.cc/JFS3-UVRZ>] (documenting shortcomings in food safety among farmers market vendors in Pennsylvania).

2. Private Audits

Government oversight is not the only, or even the primary, line of defense protecting consumers from the risk of contaminated produce. Large commercial buyers of fresh produce—distributors, supermarkets, restaurant chains, and food service providers—require their suppliers to obtain various sorts of certification of regulatory compliance and standards conformity from private food safety auditing firms.¹¹⁵ In 2012, one leading auditor of fresh produce operations conducted 15,000 such audits.¹¹⁶ Although there are no estimates of the number of such auditors working in the U.S. in the fresh produce sector, by one count, there are 568 accredited food safety auditing firms operating worldwide.¹¹⁷ A U.S. trade association of food safety auditing firms claims that nine of its members conduct more than 200,000 audits in 100 countries each year.¹¹⁸ It is safe to say that the reach of private food safety auditing in the fresh produce sector is far greater than that of government inspections.

One shortcoming of this reliance on oversight by private auditing firms is that growers typically pay for their own audits.¹¹⁹ This arrangement creates a conflict of interest, since auditors seeking to attract or retain accounts may reduce the rigor of their inspections or inflate audit scores to please a grower.¹²⁰ The conflict of interest could be avoided by suppliers relying on their own in-house auditors or paying independent auditors. Although such arrangements are common in supply

115. For an overview of private food safety auditors, see LYTTON, *supra* note 3, at 127–30, 251–52.

116. STAFF OF H.R. COMM. ON ENERGY AND COMMERCE, 112TH CONG., REP. ON THE INVESTIGATION OF THE OUTBREAK OF LISTERIA MONOCYTOGENES IN CANTALOUPE AT JENSEN FARMS 6 (2012) (stating that leading produce auditing firm Primus Labs “conducts approximately 15,000 audits per year . . . for over 3,000 clients worldwide”).

117. U.S. FOOD AND DRUG ADMIN., DOCKET NO. FDA- 2011-N-0143, PRELIMINARY REGULATORY IMPACT ANALYSIS FOR THE PROPOSED RULES ON FOREIGN SUPPLIER VERIFICATION PROGRAMS (2011), 139 <https://www.fda.gov/media/86371/download> [<https://perma.cc/FS2F-72PN>] (estimating “there are 568 accredited auditors/CBs specializing in food safety audits”); see also Julie A. Caswell, Kathryn A. Boys, Alyssa A. Danilow & Kathryn E. Lynch, Food Certification Industry Capacity and Ability to Comply with FSMA Final Rule on Accredited Third- Party Certification, unpublished paper presented at the annual meeting of the Agricultural and Applied Economics Association, Chicago 3 (July 30, 2017), http://ageconsearch.umn.edu/record/258468/files/Abstracts_17_05_24_20_25_18_51_71_192_117_16_0.pdf [<https://perma.cc/YS2K-XPk5>] (estimating 581 food safety certification bodies internationally).

118. Food Safety Service Providers, Comments on Proposed Rule for Accreditation of Third- Party Auditors/Certification Bodies (January 24, 2014), <https://www.noticeandcomment.com/FDA-2011-N-0146-0031-fcod-344195.aspx> [<https://perma.cc/8BAJ-NVJB>] (stating that “FSSP members conduct more than 200,000 audits and inspections in over 100 countries each year”).

119. The analysis below of why fresh produce growers pay for audits draws from Timothy D. Lytton, *Exposing Private Third-Party Food Safety Auditors to Civil Liability for Negligence: Harnessing Private Law Norms to Regulate Private Governance*, 27 EUR. REV. PRIV. L. 353 (2019).

120. For a detailed analysis of the conflict of interest in this arrangement, see Lytton & McAllister, *supra* note 13; see also LYTTON, *supra* note 3, at 206–16; Elizabeth Weise, *Food Safety Auditors Are Often Paid by the Firms They Audit*, USA TODAY (Oct. 4, 2010), https://usatoday30.usatoday.com/yourlife/food/safety/2010-10-01-foodaudits01_ST_N.htm#uslPageReturn [<https://perma.cc/JUP4-GESE>]. For empirical evidence of conflict of interest in third-party environmental audits as a result of auditors being paid by regulated entities, see Esther Duflo, Michael Greenstone, Robini Pandi & Nicolas Ryan, *Truth-Telling by Third Party Auditors and the Response of Polluting Firms: Experimental Evidence from India*, 128 Q.J. ECON. 1499, 1504 (2013).

chains for processed foods, this is not the norm in the fresh produce sector due to limited capacity and inefficiency.¹²¹ Large commercial buyers of fresh produce frequently lack sufficient in-house staff to audit their many suppliers.¹²² A typical supermarket carries more than 700 fresh produce items, each of which may have as many as a dozen suppliers.¹²³ Moreover, to ensure consistent availability of fresh produce throughout the year, some large commercial buyers purchase items in an auction system, meaning that their suppliers change frequently.¹²⁴ These buyers do not know who many of their suppliers are until they purchase items at auction, too late to inspect the suppliers' cultivation and harvest practices. Retail supermarkets, restaurant chains, and cafeteria caterers often buy from distributors, so they lack a direct relationship with growers.¹²⁵

Buyers could require growers to pay for government audits, such as AMS audits, to avoid concerns about the reliability of audits performed by private third-party auditors. However, it appears that most large commercial buyers of fresh produce prefer private auditors to government auditors.¹²⁶ One reason might be that private auditors charge less for their services.¹²⁷ Another explanation might be that private auditing firms, unlike government auditors, can customize audits to incorporate the product specifications of any buyer. Private auditors are free to audit against any standard requested by a buyer. By contrast, government auditors can audit only against standards that are incorporated into agency regulations or guidance, or that, at least, undergo a review by multiple layers of agency personnel to obtain agency approval.¹²⁸ Buyers' long-term relationships with specific firms may also explain their preference for private auditors. When it comes time to select a list of acceptable auditors for the growers who supply them, buyers may gravitate to private auditing firms that have previously provided auditing or testing services for them as part of their efforts to manage food processors in their supply chain.¹²⁹

Moreover, not everyone believes that government auditors are more reliable than private auditors. There is no empirical evidence to support broad generalizations about the comparative reliability of government auditors and private auditors.

121. Telephone interview with Dave Theno, former founder and owner of Gray Dog Partners, leading independent food safety consultant (Sept. 5, 2014).

122. Telephone interview with James Prevor, Editor-in-Chief of Produce Business magazine (Aug. 13, 2013); Telephone interview with Richard Stier, leading food safety scientist and commentator on food safety auditing (Aug. 26, 2013).

123. Edward W. McLaughlin, Kristen S. Park & Gerald F. Hawkes, *Produce Industry Procurement: Changing Preferences and Practices*, FOOD INDUS. MGMT. PROGRAM, CORNELL UNIV. 7 (Sept. 2015), <http://publications.dyson.cornell.edu/outreach/extensionpdf/2015/Cornell-Dyson-eb1510.pdf> [<https://perma.cc/JW36-38NG>]; Telephone interview with Prevor, *supra* note 122; Telephone interview with John Hansen, former Vice President, Enterprise Risk Management, Sprouts Farmers Market (Mar. 17, 2015).

124. Telephone interview with James Prevor, *supra* note 122; Telephone interview with Bill Marler, leading food safety litigator and consumer advocate (Oct. 5, 2014).

125. Telephone interview with James Prevor, *supra* note 122; Telephone interview with Bill Marler, *supra* note 124.

126. Telephone interview with Ken Petersen, Chief Audit Services Branch, Specialty Crops Inspection Division, USDA-AMS (Sept. 2, 2016).

127. *Id.*

128. *Id.*

129. *Id.*

Additionally, auditors often come from the same communities as the farmers that they audit and may be tempted to relax standards because they “want to be liked,” according to one industry insider, who believes that government auditors are no less subject to this social pressure than private auditors.¹³⁰

Under the California LGMA, leafy greens handlers pay for government audits of growers. To participate in the LGMA, handlers must pay an assessment, from which the LGMA funds the audits. Participating handlers receive the right to display the LGMA food safety certification mark on the packaging of their products. Although a similar marketing agreement was established among Arizona leafy greens handlers, the LGMA model has not spread to other regions of the country or other parts of the fresh produce sector.¹³¹ Objections to the LGMA model include concerns about anti-competitive effects, the high cost of coordination required to establish and maintain a marketing agreement, and the preference of many buyers for private auditors over government inspectors.¹³²

Evidence that private food safety auditors in the fresh produce sector reduce the rigor of audits and inflate scores is entirely anecdotal. No data exist to support even a rough estimate of the extent of the problem. Nevertheless, personal interviews, professional commentary, and the popular press suggest that financial conflict of interest compromises the integrity of some audits and undermines public confidence in private food safety auditing generally.¹³³ At the very least, it is safe to say that both industry insiders and outside commentators believe it to be a significant concern that merits attention.

Moreover, private oversight, like government oversight, differs for small growers who sell their produce locally. Growers who sell directly to consumers need not satisfy the product specifications of large commercial buyers. Additionally, not all individual restaurants, small grocery stores, and local food service operations in

130. Telephone interview with James Prevor, Editor-in-Chief of Produce Business magazine (Jan. 28, 2014). For a review of evidence that third-party monitors tend to be more lenient when monitoring firms with whom they have longstanding relationships, see Jodi Short & Michael Toffel, *The Integrity of Private Third-Party Compliance Monitoring*, 42 ADMIN. & REGUL. L. NEWS 22, 23 (2016). For evidence of political and social pressure on government inspectors specifically in restaurant and food service inspection, see Daniel Ho, *Fudging the Nudge: Information Disclosure and Restaurant Grading*, 122 YALE L.J. 595 (2012); Daniel Ho, *Does Peer Review Work? An Experiment of Experimentalism*, 69 STAN. L. REV. 1, 93–94 n.407 (2017).

131. ARIZONA LEAFY GREENS MARKETING AGREEMENT, <https://www.arizonaleafygreens.org/> [<https://perma.cc/WA9U-A9JU>]; LYTTON, *supra* note 3, at 138–41 (discussing the unsuccessful attempt following establishment of the California LGMA to create a national marketing agreement for leafy greens).

132. ARIZONA LEAFY GREENS MARKETING AGREEMENT, <https://www.arizonaleafygreens.org/> (last visited Mar. 17, 2022); LYTTON, *supra* note 3, at 138–41 (discussing the unsuccessful attempt following establishment of the California LGMA to create a national marketing agreement for leafy greens).

133. See, e.g., Telephone interview with Richard Stier, *supra* note 122; Friederike Albersmeier, Holger Schulze, Gabriele Jahn & Achim Spiller, *The Reliability of Third-Party Certification in the Food Chain: From Checklists to Risk-Oriented Auditing*, 20 FOOD CONTROL 927 (2009); D.A. Powell, S. Erdozain, C. Dodd, R. Costa, K. Morley & B.J. Chapman, *Audits and Inspections Are Never Enough: A Critique to Enhance Food Safety*, 30 FOOD CONTROL 686 (2013); *Editorial: Food Safety Auditors Too Tied to Industry*, USA TODAY (Dec. 24, 2012), <https://perma.cc/E3NL-SWYR>.

area schools and hospitals require food safety audits of their suppliers.¹³⁴ A 2019 USDA report found that smaller growers are less likely than larger operations to obtain audits that would require them to make costly food safety investments in their growing operations. The report found that fewer than 40 percent of farmers with less than \$500,000 in annual produce sales obtained audits, and fewer than 20 percent of farmers with less than \$250,000 in sales obtained audits. For the smallest farms, those with less than \$25,000 in sales, the percentage drops to fewer than 5 percent.¹³⁵

3. Insurance Coverage

Aside from government regulation and industry supply chain management, liability exposure provides an additional means of encouraging fresh produce farmers to be mindful of food safety. Here, insurance could play a pivotal role. Fresh produce growers typically purchase liability insurance to protect themselves against the potentially ruinous financial consequences of civil liability for foodborne illness.¹³⁶ Moreover, large retail stores and restaurant chains typically require their suppliers to carry liability insurance and to indemnify them for any liability.¹³⁷ Such insurance and indemnification requirements are also now common among local farmers markets, restaurants, and food service operations.¹³⁸ In addition, there is growing demand among farmers, especially larger growers, for product

134. Cookson Beecher, *Fresh Produce at Farmers Markets Exempt from New Food Safety Regs*, FOOD SAFETY NEWS (Jan. 30, 2013), <https://www.foodsafetynews.com/2013/01/fresh-produce-at-farmers-markets-exempt-from-new-food-safety-regs/> [https://perma.cc/7LPH-3TUA] (noting that many farmers markets do not require GAPs certification); KRISTEN MARKLEY, FOOD SAFETY AND LIABILITY INSURANCE: EMERGING ISSUES FOR FARMERS AND INSTITUTIONS 3, 12–13 (Dec. 2010), <http://www.cias.wisc.edu/farmertools14/3-prepare-your-business/food-safety-and-liability-insurance.pdf> [https://perma.cc/YMU8-WWGJ] (finding wide variation in requirements for GAPs conformity among food service management companies who purchase from small growers); cf. Katherine A. Boys, *Linking Small Fruit and Vegetable Farmers and Institutional Foodservice Operations: Marketing Challenges and Considerations*, 34 RENEWABLE AGRIC. & FOOD SYS. 226 (2019) (asserting that “[h]ospitals, most long-term care facilities and some schools require producers to have GAPs certification”).

135. U.S. DEP’T OF AGRIC., ECONOMIC INFORMATION BULLETIN, NO. 210, U.S. PRODUCE GROWERS’ DECISIONMAKING UNDER EVOLVING FOOD SAFETY STANDARDS (June 2019) 28–29; see also, Jonan Pilet, *Survey Shows Larger Microgreens Growers Exercise More Food Safety Practices*, FOOD SAFETY NEWS (Feb. 28, 2021), <https://www.foodsafetynews.com/2021/02/survey-shows-larger-microgreens-growers-exercise-more-food-safety-practices/> [https://perma.cc/Y4GP-WCDQ] (reporting that smaller microgreens growers take fewer food safety precautions than larger growers); CIVIL EATS, *supra* note 113.

136. Marianne Bonner, *Business Insurance for Your Farm*, THE BALANCE SMALL BUSINESS (Aug. 7, 2019), <https://www.thebalancesmb.com/farm-insurance-4176080> [https://perma.cc/SY63-D84Z].

137. Standard indemnification clauses require suppliers to compensate buyers for any liability that the buyer incurs arising out of defects in the supplier’s products. For analysis of indemnification clauses in food supply chain contracts, Bill Marler, *Why Grocery Stores Really Don’t Give a Damn about Food Safety*, MARLER CLARK THE FOOD L. FIRM: MARLER BLOG (Mar. 2, 2015), <https://www.marlerblog.com/legal-cases/why-grocery-stores-really-dont-give-a-damn-about-food-safety/> [https://perma.cc/2Y7E-TN26]; LYTTON, *supra* note 3, at 247–48.

138. *Insurance, Liability, and Regulation*, FARMERS MARKET COALITION, archived at <https://perma.cc/E8PZ-ZJBG>; Kathryn A. Boys, *Food Product Liability Insurance: Implications for the Marketing of Specialty Crops*, 28 CHOICES 1 (2013); Boys, *supra* note 134, at 6.

contamination insurance to cover first-party costs associated with recalling tainted produce.¹³⁹

Insurance companies that provide liability and recall coverage could, in theory, take various measures to reduce the risk of potential food safety failures for which they would be financially responsible. For example, insurers could be selective in the types and magnitude of risks that they are willing to underwrite, which would discourage farmers from engaging in high-risk activities that would disqualify them from insurance coverage—for example, planting crops adjacent to animal husbandry operations.¹⁴⁰ Insurers could offer premium discounts to farmers who take specified precautions such as adopting irrigation methods less prone to spreading pathogens. Insurance contracts could include exclusions for high-risk activities. Insurance carriers could employ loss control experts to identify food safety concerns and advise farmers on how to reduce risk in their operations.

As a mechanism for food safety oversight in the fresh produce sector, insurance offers important advantages over government inspections and private third-party audits. First, unlike government inspections, insurance oversight is not limited by fixed budgets. For insurers, expanding oversight to cover more farms is not a financial strain but rather a welcome opportunity to collect additional premiums, which provide increased resources for inspections and risk management services. Second, insurers are not susceptible to the conflict of interest that erodes the reliability of private third-party audits paid for by growers. Like private third-party auditors, insurers are paid by growers. However, insurers have a distinctly powerful incentive to maintain rigorous oversight of farms to reduce the risk of food safety failures that could give rise to claims for which the insurers would be liable.

Thus, insurance is ideally suited to overcome serious limitations of government inspections and private third-party auditors. However, significant information constraints currently hinder the capacity of insurance companies to provide self-sustaining rigorous oversight of food safety on farms. The next Part details the nature and sources of these constraints.

III. CHALLENGES TO USING INSURANCE TO REDUCE FOOD SAFETY RISK

According to economic theory, insurance manages risks by organizing them into defined categories of losses using claims data and applying actuarial analysis to price coverage and design cost-effective means to reduce the risk of those losses.¹⁴¹ For reasons described in this section, the estimated 48 million cases of acute foodborne illness in the U.S. each year generate only a handful of insurance claims. This presents a significant challenge to insurance underwriting.

139. AON, 2020 EMERGING TRENDS IN PRODUCT RECALL AND CONTAMINATION RISK MANAGEMENT 23 (2020), <https://aon.com/forms/2020/2020-emerging-trends-product-recall.jsp> [<https://perma.cc/HDU9-RX8V>].

140. Animal husbandry includes the breeding, feeding, and tending of domestic animals, typically for food production. For other examples of high-risk activities, see discussion *supra* notes 107–08 and accompanying text.

141. See, e.g., Ben-Shahar & Logue, *supra* note 14; Cogan, *supra* note 34. See also, Baker, *supra* note 43 (describing and critiquing this standard economic account of insurance underwriting).

A. Incomplete Outbreak Investigations

Although food poisoning is very common, identifying the source of contamination is extremely rare. Most victims of acute gastroenteritis endure the illness at home without seeking medical care. Of those who do visit a physician, most are provided with advice and palliative medications but not asked to provide a stool sample. Only if a victim submits a stool sample can a laboratory identify the pathogen responsible for that victim's illness and report it to state public health authorities. If state public health authorities are equipped and choose to subject the pathogen to DNA analysis, they will upload the pathogen's DNA information to a database maintained by the CDC. When two or more pathogens have identical DNA fingerprints, the CDC will identify the corresponding illnesses as an outbreak, which the agency may choose to investigate further, depending upon available resources and priorities.¹⁴²

Investigation requires working with state and local health officials to interview outbreak victims, asking them to recall all the foods that they consumed a week or more ago, depending on the incubation period of the infection. Even if these interviews reveal a common food or food ingredient recalled by multiple victims, investigators cannot identify a company unless at least one victim remembers the brand of the food, which may be especially difficult in the case of unlabeled fresh produce. Confirmation of the food vehicle entails testing a sample of the food for the outbreak pathogen, which requires that victims or the restaurants where they ate still possess remnants of the food, weeks after it was eaten, which is especially unlikely in the case of fresh produce.

Determining the root cause of the contamination requires tracing the food product back through the supply chain and conducting environmental pathogen testing at each point of potential contamination, including final preparation, sale, distribution, processing, and growing. In the case of fresh produce, investigators typically show up on farms weeks or months into an investigation, by which time growing fields are completely harvested and frequently replanted.

Consequently, of the estimated 48 million episodes of foodborne illness each year in the U.S., investigators link only one in 12,500 to a single category of food, and they trace only a fraction of those to a specific product with an identifiable producer.¹⁴³ These odds are even lower when the food vehicle is fresh produce,

142. For a more detailed description of foodborne illness surveillance and investigation, summarized in this and the following two paragraphs, see LYTTON, *supra* note 3, at 178–200; see also Barbara B. Kowalczyk, Sara M. Pires, Elaine Scallan, Archana Lamichhane, Arie H. Havelaar, & Brecht Devleesschauwer, *Improving Burden of Disease and Source Attribution Estimates*, in FOOD SAFETY ECONOMICS: INCENTIVES FOR A SAFER FOOD SUPPLY 145–46 (Tanya Roberts ed. 2018); Centers for Disease Control and Prevention, *Steps in a Foodborne Illness Outbreak Investigation*, (Mar. 18, 2022), https://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/investigations/#anchor_1529592062; Buzby, Frenzen & Rasco, *supra* note 35, at 3–7.

143. Ctr. for Disease Control, *supra* note 3. The CDC identified 841 foodborne illness outbreaks resulting in 14,481 illnesses in the U.S. in 2017. The agency identified a single food category as the source in 218 (26 percent) of those outbreaks. CENTERS FOR DISEASE CONTROL AND PREVENTION, SURVEILLANCE FOR FOODBORNE DISEASE OUTBREAKS, UNITED STATES, 2016, ANNUAL REPORT 2, (Ctr. For Disease Control, 2019), https://www.cdc.gov/fdoss/pdf/2017_FoodBorneOutbreaks_508.pdf. If one

which may be sold unpackaged at retail without any brand label or may be bagged in a mix containing produce from many different growers.¹⁴⁴ Moreover, even when public health officials identify a responsible farm, they typically fail to identify the root cause of contamination.¹⁴⁵

B. Few Claims

The difficulty of attributing episodes of foodborne illness to specific products makes instances of civil liability rare compared to the prevalence of foodborne illness.¹⁴⁶ Civil liability requires that a victim be able to identify a company that sold the contaminated food that caused his or her illness.¹⁴⁷ Moreover, not all victims who can identify the source of the food that sickened them file a lawsuit. Additionally, few victims suffer sufficiently serious harm that would justify a settlement or jury verdict large enough to finance litigation via a contingency fee to a plaintiff's attorney.

Consequently, growing operations generate very few liability insurance claims arising out of foodborne illness. One agent with nearly thirty years of experience selling farm insurance could not recall a single claim involving microbial

assumes, for the purposes of estimation, that these illnesses are equally distributed throughout the outbreaks, this suggests that approximately 3,754 illnesses are associated with a single food category/vehicle (14,481 x (218/841)), which is .008 percent of the 48 million annual illnesses, or roughly 1 in 12,500. CDC officials estimate that only about half of reported outbreaks are associated with a source of contamination. See L.G. Brown, E.R. Hoover, C.A. Selman, E.W. Coleman, & H. Schurz Rogers, *Outbreak Characteristics Associated with Identification of Contributing Factors to Foodborne Illness Outbreaks*, 145 EPIDEMIOLOGY & INFECTION 2254, 2256–57 (2017). Even these associations fall short of specific identification of root causes. See C. A. Selman, *Public Health Measures: Environmental Assessment in Outbreak Investigation*, in 4 ENCYCLOPEDIA OF FOOD SAFETY 98, 99. John Guzewich, a retired senior FDA food safety official, estimates that less than 10 percent of all outbreak investigations identify root causes of contamination. E-mail correspondence from John Guzewich, (May 25, 2020). Robert Tauxe, the Director of the Division of Foodborne, Waterborne and Environmental Diseases at the CDC, estimates that the FDA conducts two to four root cause investigations on farms each year. E-mail correspondence from Robert Tauxe, Dir. of the Div. of Foodborne, Waterborne and Environmental Diseases, CDC (May 27, 2020).

144. See Brown et al., *supra* note 143, at 2254 (finding that contributing factors are more often identified when outbreaks are associated with high-volume food service operations subjected to environmental testing within a day of an establishment being linked to an outbreak).

145. Even in resource intensive investigations of high-profile outbreaks, conclusions regarding the source of contamination often remain speculative. See, e.g., LYTTON, *supra* note 3, at 10 (2011 Jensen Farms cantaloupe *Listeria* outbreak), 119 (2006 Dole baby spinach *E. coli* O157:H7 outbreak), 180–81 (2008 jalapeno pepper *Salmonella* outbreak).

146. Buzby, Frenzen & Rasco, *supra* note 35, at 13–14, 24 (counting 178 lawsuits resulting in jury verdicts between 1988 and 1997); Cogan, *supra* note 34, at 1538–42; (discussing low food safety litigation rates); cf. Denis W. Stearns, *Contaminated Fresh Produce and Product Liability: A Law-in-Action Perspective*, in MICROBIAL SAFETY OF FRESH PRODUCE 397 n.19 (Xuetong Fan ed., 2009); LYTTON, *supra* note 3, at 170 (noting that most foodborne illness lawsuits settle prior to trial and many are settled before they are even filed).

147. See Denis Stearns, *A Critical Appraisal of the Impact of Legal Action on the Creation of Incentives for Improvements in Food Safety in the United States*, in FOOD SAFETY ECONOMICS: INCENTIVES FOR A SAFER FOOD SUPPLY 370 (Tanya Roberts ed. 2018). On the legal doctrines governing liability for foodborne illness and litigation dynamics more generally, see, Lytton, *supra* note 3, at 247–50.

contamination of fresh produce.¹⁴⁸ A senior farm insurance underwriter with nine years of experience at a major carrier could also not recall a single claim involving microbial contamination of food.¹⁴⁹ Another senior underwriter with seventeen years of experience at a second major carrier could recall no claims by small farms and only a few agribusiness claims.¹⁵⁰ The global head of agribusiness for a third major carrier stated that “we very rarely see that type of claim,” and had to go back fifteen years to cite an example.¹⁵¹ A senior underwriter at fourth company counted “something in the neighborhood of eight to ten” such claims in 2019—which hardly constitutes a basis for robust actuarial data.¹⁵² A veteran field underwriter in a major agricultural state compared the frequency of foodborne illness claims to the chances of a lightning strike.¹⁵³

The low rate of claims hinders the capacity of liability insurance to regulate food safety risk in several ways. To begin with, because lawsuits are extremely rare, insurance companies are likely to be unconcerned about food safety risk when offering liability coverage. Additionally, insurance premiums associated with the very remote risk of being sued are likely to be low, leaving underwriters little room to offer meaningful discounts capable of incentivizing policyholders to invest more in food safety precautions. Moreover, low premiums provide insurance companies with fewer resources to develop food safety expertise that can be applied to underwriting or contract design, or to provide loss control consulting services for policyholders. The remote risk of lawsuits also diminishes the incentive that deductibles and coverage exclusions might otherwise give to policyholders to avoid activities that increase the risk of contamination. The infrequency of lawsuits forecloses the common underwriting practice of relying on loss history to evaluate applications and set premiums.¹⁵⁴ And a paucity of claims deprives a company of data that it can use to refine its underwriting practices, coverage terms, and loss control advice.¹⁵⁵

However, despite the infrequency of claims, liability coverage for food safety risk is a standard feature of the insurance carried by farms, both large and small. Losses may be rare, but insurance professionals’ frequent references to periodic high-profile outbreaks suggest that food safety is a salient risk for underwriters. Part III surveys the variety of policies that include this coverage. Part

148. Telephone interview with Agent C (Dec. 2019).

149. Telephone interview with Underwriter N (Dec. 2019).

150. Telephone interview by research assistant Lillian Henry with Underwriter H (Feb. 2020).

151. Telephone interview with Underwriter I (Nov. 2019).

152. Telephone interview by research assistant Lillian Henry with Underwriter J (Feb. 2020); *see also* Telephone interview by research assistant Lillian Henry with Underwriter C (Apr. 2020) (recalling only “very few” recall claims in thirty-three years of experience at a leading U.S. farm and agribusiness carrier).

153. Telephone interview with Underwriter A (Nov. 2019).

154. This is not to say that applications for insurance do not ask about an applicant’s claims history or that underwriters ignore this issue. Rather, the point here is that the rarity of prior claims means that a “clean” loss history may not be a reliable indicator of the risk of future claims. For an example of an application that inquires about claims history, *see Vendor/Producer Insurance*, CAMPBELL RISK MANAGEMENT, (Mar. 18, 2022), <https://www.campbellriskmanagement.com/for-vendors/>.

155. This paragraph summarizes a more robust analysis of underdeterrence in food product liability insurance in, Cogan, *supra* note 34, at 1543–45.

IV then describes how insurers manage this risk in response to high-profile outbreaks.

IV. FOOD SAFETY COVERAGE FOR FRESH PRODUCE GROWERS

Insurance companies sell food product liability coverage and food product contamination coverage to fresh produce growers in a variety of forms. These types of coverages may be bundled with other lines of coverage in standard package policies, added as endorsements to other types of coverage, or sold as free-standing monoline policies.¹⁵⁶ They may be expanded by supplemental excess or umbrella policies.¹⁵⁷ They may be written using standard forms created by the Insurance Services Office (ISO) or the American Association of Insurance Services (AAIS), company-specific insurer forms, or customized manuscript forms.¹⁵⁸

A. Farm Insurance

Food product liability coverage is typically sold to growers as part of either farm liability coverage or commercial general liability coverage. Farm liability insurance covers only losses arising out of farming operations. Farms engaged in activities beyond the scope of farming require commercial general liability coverage.¹⁵⁹ Commonly used policy language defines farming as follows:

“Farming” means the operation of an agricultural or aquacultural enterprise, and includes the operation of roadside stands, on your farm premises, maintained solely for the sale of farm products produced principally by you. Unless specifically indicated in the Declarations, “farming” does not include:

- a. Retail activity other than that described above; or

156. *ISO Farm Liability Insurance Products*, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2020), <https://www.irmi.com/online/agribusiness/farm-liability/coverage-forms/iso-farm-liability-insurance-products.aspx>; *Other ISO Farm Liability Options* (2020), <https://www.irmi.com/online/prmi/ch015/1115q000/al15q50-other-iso-farm-liability-options.aspx>. A monoline policy covers only one type of risk. *Monoline Policy*, INSURANCEOPEDIA (2021), <https://www.insuranceopedia.com/definition/2957/monoline-policy>.

157. *Farm Umbrella Liability*, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2020), <https://www.irmi.com/online/agribusiness/farm-overview/umbrella-liability.aspx>. Umbrella policies may offer coverage for additional risks and higher coverage limits. Excess policies merely offer higher coverage limits for risks already covered by the underlying policy. Ashley Arikawa, *Umbrella vs. Excess Liability Insurance Policies*, J. MOREY CO., INC. (May 23, 2013), https://www.jmoreyins.com/2013/05/23/umbrella_vs_excess_liability_insurance_policies/ [<https://perma.cc/DR9D-XYHG>].

158. *Policy Forms Used*, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2020), <https://www.irmi.com/online/agribusiness/farm-property/operations/policy-forms-used.aspx>.

159. *Farm Liability Underwriting Considerations*, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2020), <https://www.irmi.com/online/agribusiness/farm-overview/exposures/underwriting-considerations.aspx>; RMI Farm Liability Underwriting Considerations; Neil Hamilton, *Chapter Ten: Insurance and Liability*, THE LEGAL GUIDE FOR DIRECT FARM MARKETING (1999), <https://web.archive.org/web/20150520021151/http://directmarketersforum.org/the-legal-guide-for-direct-farm-marketing/> [<https://perma.cc/2WLR-Y957>].

b. Mechanized processing operations.¹⁶⁰

According to this definition, farming would not include selling farm products at an offsite farmers market or cutting and packaging mixed greens.¹⁶¹ These would be considered commercial activities beyond the scope of farming.

Farm policy language varies, as does interpretation of common terms. One longtime underwriter explained that the key distinction between farming and commercial activity was whether the produce in question was “unaltered” or “altered” when the farmer sold it.¹⁶² Another experienced underwriter emphasized the distinction between selling products “wholesale” versus “retail.”¹⁶³ A third contrasted processing one’s own produce with processing produce grown by others.¹⁶⁴ Some policies would allow coverage for selling at farmers markets but not for selling online.¹⁶⁵ For others, sales of more than \$500 no longer qualify as farming.¹⁶⁶

Insurance companies typically sell farm liability coverage as part of a farm insurance package, which includes some combination of coverage for a farm dwelling, household personal property, farm machinery and equipment, farm structures, and farm products and supplies, and may also include personal or commercial auto coverage.¹⁶⁷ The liability insurance component covers liability arising out of conditions on the premises and farming operations, farm products and completed operations, contractual agreements to assume the liability of others, and injuries caused by independent contractors doing work for the farm.¹⁶⁸ Liability for

160. *Farm Liability Coverage Form*, FL 00 20, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2015), <https://www.irmi.com/online/prmi/ch015/1115q000/al15q40-iso-farm-liability-insurance.aspx>. The term “declarations” refers to the front page or pages of an insurance policy that specifies key information specific to the insured, including policy limits. *Declarations*, INTERNATIONAL RISK MANAGEMENT INSTITUTE (2021), https://www.irmi.com/term/insurance-definitions/declarations_

161. Other examples offered by interview subjects included preserving jam, baking pies, pressing apple cider, making wine, canning vegetables, or extracting olive oil. See Telephone interview with Underwriter A, *supra* note 153 (jam); Telephone interview by research assistant Lillian Henry with Agent B (Oct. 2019) (jam, apple cider, vegetables); Telephone interview with Agent C, *supra* note 148 (jam, wine, oil); Telephone interview with Underwriter N, *supra* note 149 (jam, pies).

162. Telephone interview with Underwriter A, *supra* note 153.

163. Telephone interview with Product Developer A (Sept. 2019).

164. Telephone interview with Underwriter N, *supra* note 149.

165. Telephone Interview with Underwriter N, *supra* note 149.

166. See Telephone Interview with Agent C, *supra* note 148; see also *Farming Defined*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-overview/exposures/farming-defined.aspx>; *Farm Liability Underwriting Considerations*, *supra* note 159; *Farm Insurance*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, https://www.irmi.com/online/agribusiness/farm-overview/basics/farm-insurance.aspx#jd_what_is_a_farm.

167. *Farm Insurance*, *supra* note 166; Bonner, *supra* note 136.

168. *General Liability Exposures*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/cli/ch004/1104c000/al04c010.aspx>; *Farm Premises and Operations Risks*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-liability/farm-premises-operations-risks.aspx>.

foodborne illness from eating contaminated products sold by the farmer falls within the category of farm products and completed operations.¹⁶⁹

Farm insurance packages are designed for farm owners who live and work on their farms.¹⁷⁰ Insurance companies justify farm liability coverage limits excluding processing and offsite sales as a means of ensuring that farm insurance is affordable. As one underwriter put it, “farm liability is relatively inexpensive to purchase, so the degree of exposure it is willing to entertain cannot be very robust, otherwise the price would have to go considerably higher.”¹⁷¹ Another underwriter explained, “[G]enerally, we have found that when you begin altering your product, you begin marketing to a wider base. Your exposure is greater because you can package your strawberry jam and ship it anywhere around the state.”¹⁷²

B. Commercial General Liability Coverage

For farmers whose operations extend beyond farming, insurance companies offer commercial general liability (CGL) coverage, which extends to liability arising out of processing, packing, storage, sales, and distribution, and which is, consequently, more expensive than farm liability coverage.¹⁷³ Some companies sell CGL as part of a business operators package, designed for small businesses, which includes commercial property and other business-related coverages, or as a standalone policy.¹⁷⁴ Others include CGL as part of a farm insurance package.¹⁷⁵ Alternatively, companies sometimes sell farmers freestanding CGL policies and add personal property and liability coverages as endorsements.¹⁷⁶ A few companies sell

169. *Farm Products and Completed Operations Risk*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-liability/farm-premises-operations-risks.aspx>; see Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Agent C, *supra* note 148; Telephone Interview with Underwriter I, *supra* note 151.

170. Bonner, *Business Insurance*, *supra* note 136; *Farmowners Insurance*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/term/insurance-definitions/farmowners-insurance>. Small farm operations with minimal farming operations on a small amount of acreage, a dwelling, a limited number of outbuildings, little machinery, personal private passenger vehicles or small truck, and a farmer whose primary source of income is other than farming—often referred to as “hobby” or “gentleman’s” farms or “ranchettes”—are typically covered under homeowners policies. *Farm Insurance*, *supra* note 166.

171. Telephone Interview with Product Developer A, *supra* note 163.

172. Telephone Interview with Underwriter A, *supra* note 153.

173. *Farm Insurance*, *supra* note 166.

174. Marianne Bonner, *What is a Business Owners Policy?*, THE BALANCE SMALL BUSINESS (Nov. 19, 2020), <https://www.thebalancesmb.com/what-is-a-business-owners-policy-4158586> [<https://perma.cc/9XJX-RD3W>]; Telephone Interview by research assistant Zachary Trippe with Agent D (Feb. 2020); Telephone Interview with Consultant A (Oct. 2019).

175. *Farm Insurance*, *supra* note 166; *AAIS Farmowners Program*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/prmi/ch015/1115q000/al15q60-aa-is-farmowners-program.aspx>; Telephone Interview with Consultant B (Sept. 2019). CGL could be added to a farm insurance package as a standard module or an endorsement. Telephone Interview with Underwriter F (Oct. 2019).

176. *Endorsements to the CGL Policy*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-liability/endorsements/to-the-cgl-policy.aspx>;

farmers market insurance, which bundles general liability and products and completed operations liability coverage for farmers who sell their goods at farmers markets.¹⁷⁷ Insurance companies can broaden the scope of both farm liability coverage and CGL via endorsements, excess policies, and umbrella policies that expand products and completed operations coverage.¹⁷⁸

C. Product Contamination Policies

Product contamination insurance is not a standard component of either farm or commercial insurance.¹⁷⁹ Some insurance companies sell limited coverage for the costs of recalling a contaminated product as an endorsement to farm or commercial liability policies.¹⁸⁰ Although some carriers offer recall endorsements, most small and medium size farmers balk at the extra price,¹⁸¹ which one underwriting manager estimated would double a typical small farmer's premium,¹⁸² and another suggested could increase a small farmer's premium by as much as 800 percent.¹⁸³ For larger operations, some insurance companies offer more robust coverage that is tailored to the needs of the policyholder.¹⁸⁴ In addition to covering the costs of removing a product from store shelves and destroying it, these policies may also cover associated business losses when clients reduce or cancel purchases, as well as the costs of restoring a policyholder's sales or rehabilitating its brand.¹⁸⁵ Currently, more than thirty carriers sell such coverage to food and beverage companies with policy limits

Telephone Interview with Consultant B, *supra* note 175. An endorsement is an amendment to an insurance policy that either changes or adds to terms of the policy. *Endorsement*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/term/insurance-definitions/endorsement>; *Farm Liability Endorsements*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-liability/endorsements.aspx>.

177. See, e.g., *Farmers Market Insurance for Food Vendors*, FOOD LIABILITY INSURANCE PROGRAM, <https://www.fliprogram.com/farmers-market-insurance> [<https://perma.cc/Z225-P6T4>]; *FMC and Campbell Risk Management Make Farmers Market Insurance Available to Producers Nationwide*, FARMERS MARKET COALITION, https://farmersmarketcoalition.org/crm_insurance/ [<https://perma.cc/FGU8-E42J>].

178. See Marianne Bonner, *Products-Completed Operations Coverage*, THE BALANCE SMALL BUSINESS (July 30, 2018), <https://www.thebalancesmb.com/products-completed-operations-coverage-462588> [<https://perma.cc/V9Y7-S7HV>]; Telephone interview with Underwriter F, *supra* note 175; Telephone interview with Underwriter L (Oct. 2019); Telephone interview with Agent B, *supra* note 161.

179. See Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Underwriter G; Telephone Interview with Underwriter J, *supra* note 152; Telephone Interview by research assistant Lillian Henry with Underwriter B (Feb. 2020); Telephone Interview with Loss Control Specialist B (Apr. 2015). For a discussion on explicit exclusion of recall costs and liabilities in ISO Farm Insurance, see *Farm Liability Coverage Exclusions*, INTERNATIONAL RISK MANAGEMENT INSTITUTE, <https://www.irmi.com/online/agribusiness/farm-liability/exclusions.aspx>.

180. Telephone Interview with Product Developer A, *supra* note 163; Telephone interview with Underwriter N, *supra* note 149.

181. Telephone Interview with Agent A (Nov. 2019); Telephone Interview with Broker B (Sept. 2019); Telephone interview with Underwriter H (Feb. 2020); Telephone interview with Underwriter G, *supra* note 179.

182. E-mail from Underwriting Manager J (Dec. 21, 2020) (on file with author).

183. E-mail from Underwriter H (Dec. 22, 2020) (on file with author).

184. Telephone Interview with Underwriter I, *supra* note 151; see E-mail from Underwriter J (Dec. 21, 2020) (on file with author); Telephone Interview with Underwriter H, *supra* note 150.

185. LYTTON, *supra* note 3, at 148–49.

as high at \$150 million.¹⁸⁶ Approximately one third of these policies cover fresh produce growers or processors.¹⁸⁷ The next Part details how insurers incorporate risk management into farm, CGL, and product contamination policies.

V. FACTORING FOOD SAFETY INTO UNDERWRITING FRESH PRODUCE FARMING

Accounts of insurance as regulation specify several means by which insurance carriers attempt to reduce the risk of losses. These include risk selection, premium pricing, contract terms, loss prevention, and public education.¹⁸⁸ A closer look at underwriting practices reveals how some insurance carriers employ these strategies to encourage compliance with food safety standards on fresh produce farms.

A. Bureaucratic Structure

Underwriting is a collaborative process. Agents or brokers typically initiate the underwriting process by collecting information from applicants for insurance.¹⁸⁹ Additionally, carriers may authorize agents to enter into an insurance contract on behalf of the carrier with a farmer, a practice known as “binding” coverage. As one underwriting manager explained:

[Our agents are] the first point of contact, and they serve as our frontline underwriters. They have the ability and training to evaluate risk. . . . They are familiar with our underwriting guides. And even though they are not underwriters, they are charged with evaluating whether [a risk is] something we would be interested in insuring and whether we can help a particular individual out. . . . Most of our agents have the ability to bind a farm policy without home office underwriting approval, so long as it meets our guidelines. So, a lot of times, they can just go ahead and write a farm policy if it meets the underwriting guidelines. If it needs to go commercial or if it’s a more complicated type of farm or if there are other considerations that come up, the agent would then call

186. Steves, *supra* note 49, at 11–13, 17–18.

187. E-mail from Bernhard Steves (Jan. 11, 2021) (on file with author).

188. *See, e.g.*, Baker & Swedloff, *supra* note 23; Ben-Shahar & Logue, *supra* note 14.

189. Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Agent C, *supra* note 148. Agents represent insurance companies and have authority to “bind business”—that is, enter into an insurance contract on behalf of the insurance company or companies that they represent. A “captive” agent represents only one company. An “independent” agent may represent multiple companies. Brokers represent consumers and “place business”—that is, connect their clients with insurance companies offering suitable coverage. Brokers are not attached to an insurance company or companies. Brokers cannot bind business; they merely direct their clients to insurance agents or directly to companies, with whom the clients can enter into insurance contracts. Agents and brokers typically earn commissions on the policies that they bind or place. Some captive agents may be salaried employees of the insurance companies that they represent. *Insurance Agents and Brokers*, Insureon (2020) <https://www.insureon.com/insurance-glossary/insurance-agent-broker> [<https://perma.cc/R5KZ-F78J>]; Marianne Bonner, *How Insurance Agents and Brokers Make Money*, THE BALANCE SMALL BUSINESS (September 9, 2019), <https://www.thebalancesmb.com/agents-versus-brokers-and-how-they-make-money-462383> [<https://perma.cc/FHJ9-FM9J>].

the home office underwriter or field underwriter, and we would dig into it a little bit deeper.¹⁹⁰

Interviews with agents and underwriting managers indicate variation among carriers as to how commonly they authorize agents to bind farm and commercial coverage without approval by an underwriter.¹⁹¹ Carriers are more willing to authorize agents to independently bind coverage for smaller and more routine risks.¹⁹² The underwriter quoted above explained that agents bind roughly 70 percent of his company's farm insurance but very little of its commercial insurance unless the agent has earned special authority as a "master underwriter agent."¹⁹³ Another underwriter indicated that his company requires agents to submit all insurance applications for approval by an underwriter.¹⁹⁴ One agent reported that an insurance carrier for whom he sold an inexpensive policy with relatively low coverage limits outsourced to him the entire underwriting process.¹⁹⁵

Agents and brokers learn more about farm risks and coverage options as they gain experience. For example, "in California's Central Valley area, there are a number of brokers and agents who are known to specialize within the farm community," explained a longtime senior claims executive.¹⁹⁶ Typically, a broker or agent "will gather information on the risk . . . so that they can look for carrier matches and make recommendations about the types of coverages," said another senior claims executive. The brokers and agents "are familiar with the food industry, so they know what the issues are within the industry."¹⁹⁷

Underwriters are insurance company employees who assess the magnitude of risks for which an applicant seeks coverage to determine whether it would be profitable for the carrier to issue an insurance policy and, if so, how much to charge

190. Telephone Interview with Underwriter A, *supra* note 153. Other interview subjects provided similar descriptions of the role of agents in underwriting. Telephone Interview with Product Developer A, *supra* note 163 ("The agents are . . . the eyes on the ground, so to speak. They are the ones that work with the customer to evaluate the scale of their operations, the extent of the exposures on the farm and evaluate what those coverage needs are."); Telephone Interview with Underwriter I, *supra* note 151 ("[W]e consider them our first-level underwriters who will see the risk before they submit [an application] to us and then they can tell the underwriter about it and about what's on the location or what's at the location."); Telephone Interview with Underwriter H, *supra* note 181 ("[The] agent is . . . our frontline person."); Telephone Interview with Underwriter J, *supra* note 152 ("We would let the agents do some . . . [of what] we call upfront underwriting."); Telephone Interview by research assistant Lillian Henry with Broker D (Sept. 2019) ("[The] agents and brokers are considered [the] field underwriters."); Telephone Interview by research assistant Lillian Henry with Underwriter K (Apr. 2020) ("The agent is our up-front underwriter. The agent is expected to visit the risk and gain information and photos. The information is then submitted to underwriting for review.").

191. See Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Underwriter J, *supra* note 152; Telephone Interview with Agent E (Sept. 25, 2019).

192. See Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Agent E.

193. Telephone Interview with Underwriter A, *supra* note 153.

194. Telephone Interview with Product Developer A, *supra* note 163.

195. Telephone Interview with Agent E, *supra* note 192.

196. Telephone Interview with Claims Manager A (Apr. 2015).

197. Telephone Interview with Underwriter F (May 2015).

in premiums.¹⁹⁸ Underwriters review applications for insurance from agents and brokers, and they quote premiums for those applications that they approve.¹⁹⁹ Underwriting authority is hierarchical, meaning that underwriters' risk assessments are typically subjected to "a quality assurance review that takes place at the next level of underwriting, just to make sure that we have carefully evaluated . . . the liability potential. . . ." explained a risk management expert at one carrier.²⁰⁰ Some carriers employ field underwriters, who go out of the office to gather information directly from applicants through interviews and onsite inspections.²⁰¹

Loss control specialists, claims adjusters, and product managers also play a role in the underwriting process. Loss control specialists are typically inhouse risk management experts who provide advice to underwriters and policyholders about how to reduce exposure.²⁰² "We have food underwriters who specialize and focus just on food," explained a loss control specialist at a leading farm and agribusiness carrier.²⁰³ "That's all that they underwrite. Their specialty is food. And to go hand in hand with that . . . we have a couple of food specialists on our risk management team as well. It's a great partnership between underwriting and risk management."²⁰⁴ Underwriters occasionally rely on outside consultants for loss control advice.²⁰⁵

Claims adjusters investigate claimed losses by policyholders, determine the amount owed, and negotiate payments. Claims experience informs underwriting. Referring to a 2006 outbreak traced back to Dole baby spinach contaminated with *E. coli* O157:H7, a senior claims manager explained:

Our underwriters were able to learn immensely from the Dole case through our claims people, and the legal, medical, and scientific experts that the claims people work with in litigation. You can't duplicate that; you can't buy it elsewhere. . . . The underwriter learns from a claim why the loss occurred and . . . how best to avoid it in the future. . . . You can apply model data all you want, but without the unique insights you get from real world experience,

198. LYTTON, *supra* note 3, at 149.

199. *See id.*

200. Telephone Interview with Loss Control Specialist B, *supra* note 179.

201. Telephone Interview with Underwriter A, *supra* note 153; *see* Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Underwriter H, *supra* note 181; Telephone Interview with Underwriter I, *supra* note 151, Telephone Interview with Consultant B, *supra* note 175. For an elaboration of the types of information that underwriters gather, *see infra* Part V.C.

202. *Loss Control Specialist*, CAREER CONNECTIONS (2016), <https://www.career-connections.info/en/Post-Secondary-Students/Career-Profiles/Loss-Control-Specialist> [<https://perma.cc/E5LN-UM36>].

203. Telephone Interview with Underwriter M.

204. Telephone interview with Underwriter M, *supra* note 203. Other interview subjects similarly reported that loss control specialists advise underwriters. *See also* Telephone Interview with Underwriter F, *supra* note 197; Telephone Interview with Underwriter L (Oct. 2019).

205. Telephone Interview with Underwriter H, *supra* note 150; Telephone Interview with Underwriter B, *supra* note 179; Telephone Interview with Underwriter J, *supra* note 152; Telephone Interview with Underwriter L, *supra* note 178.

that's only part of the equation, and you are probably missing some very unique aspects of underwriting a risk.²⁰⁶

One senior underwriter reported that underwriters evaluating a particular risk frequently consult with claims managers who have had experience with that risk.²⁰⁷

Product managers develop, monitor, and revise the various coverages, referred to as insurance “products,” that carriers sell.²⁰⁸ Product managers collaborate with underwriting managers to craft underwriting guidelines, which standardize the types of information that underwriters should collect and how they should weigh different risk factors. “We typically work together to set up the underwriting guidelines,” reported a product manager at a major farm and agribusiness carrier. She explained that product management serves as a clearinghouse for feedback and learning within the company:

We are kind of like the nucleus that works with all the different departments, and then we take all that knowledge and feedback and turn it into something that can be incorporated into the underwriting process. Whatever we have learned from prior claims or whatever we have learned from trends in the industry—working with claims and working with our loss-control group—we will turn that into an underwriting guide or a training that we can then provide to our underwriting groups, so that they have this knowledge in the future as they're assessing risks.²⁰⁹

B. Information Gathering Methods

The information about applicants necessary for farm and agribusiness underwriting comes from a variety of sources. Typically, agents and brokers interview applicants by phone or in person.²¹⁰ Applicants sometimes submit written responses on standardized questionnaires.²¹¹

Agents, brokers, and underwriters may seek to verify this information or obtain additional information by consulting online sources. Agents and underwriters reported looking up applicants' websites and social media postings.²¹² One underwriter added that he uses Google Earth to verify relevant geographical information.²¹³ Underwriters also consult regulatory agency websites for recalls of

206. Telephone Interview with Claims Manager A, *supra* note 196.

207. Telephone Interview with Product Developer A, *supra* note 163.

208. See Terri Hitchcock, *Why Partner with an Insurance Produce Design Specialist?*, PERR & KNIGHT (Dec. 21, 2016), <https://www.perrknight.com/2016/12/21/partner-insurance-product-design-specialist/> [<https://perma.cc/E4EH-NDBE>].

209. Telephone Interview with Underwriter I, *supra* note 151.

210. See Telephone Interview with Underwriter M, *supra* note 203; Telephone Interview with Agent C, *supra* note 148; Telephone Interview with Consultant B, *supra* note 175.

211. Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Product Developer A, *supra* note 163; see, e.g., *Vendor/Producer Insurance*, *supra* note 154.

212. Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Underwriter M, *supra* note 203; Telephone Interview with Underwriter N, *supra* note 149.

213. Telephone Interview with Underwriter J, *supra* note 152.

applicants' products, warning letters, or enforcement actions against applicants.²¹⁴ As one underwriter explained:

Whenever we are underwriting a risk that is producing something that we would consider susceptible [to contamination], or it's a larger farm that is producing a good volume of fruits or vegetables, we will always check the CDC and any other product-recall sources to make sure that individual operation has not had any outbreaks. And if they have: What are the details and the reasons behind that? What have they changed since then to prevent something like that from happening again?²¹⁵

Another underwriter said that he occasionally consulted online restaurant reviews by customers and employees to search for outbreaks that might be associated with foods grown by applicants.²¹⁶

Farm inspections are not a source of underwriting information for most smaller policies. According to several agents and underwriters, underwriting small farm policies does not typically include a visit to the farm.²¹⁷ One agent explained that when the applicant is a small farm doing less than \$50,000 in sales, he does not do an inspection.²¹⁸ An underwriting manager at a large carrier reported that her company would not do a farm inspection for an agribusiness policy if the premiums were less than \$25,000.²¹⁹ Moreover, when agents do conduct an inspection for farm insurance, they typically focus on the value of farm buildings and equipment for the purposes of evaluating property coverage, with little or no attention to food safety.²²⁰

By contrast, bigger farms with processing operations, larger production volumes, or high-risk crops undergo inspections with an eye toward food safety risks.²²¹ "For a guy who's just growing strawberries and sends them to a co-op or to a jam manufacturer—there would be no inspection done on a farm like that," explained one senior underwriter. However,

if the farmer is creating a product, they are turning those berries into jam, then likely we would do an inspection. We would potentially make sure that they are following standard food safety

214. Telephone Interview with Underwriter I, *supra* note 151; Telephone Interview with Underwriter L, *supra* note 178.

215. Telephone Interview with Underwriter I, *supra* note 151.

216. Telephone Interview with Underwriter N, *supra* note 149.

217. Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Underwriter I, *supra* note 151; Telephone Interview with Underwriter F, *supra* note 197; Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Underwriter B, *supra* note 179; Telephone Interview with Agent A, *supra* note 181.

218. Telephone Interview with Agent A, *supra* note 181.

219. Telephone Interview with Underwriter F, *supra* note 197.

220. Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Underwriter H, *supra* note 150.

221. As part of its FSMA regulations, the FDA designates certain foods as posing a high risk of microbial contamination. These foods include leafy greens, sprouts, tomatoes, peppers, melons, tropical tree fruits, herbs, and all fresh-cut vegetables and fruits. U.S. Food & Drug Admin., *Food Traceability List* (Nov. 5, 2020), <https://www.fda.gov/food/food-safety-modernization-act-fsma/food-traceability-list> [<https://perma.cc/BK8S-APSB>].

practices in terms of their manufacturing of whatever the product is that they are making. So, we would have a loss prevention inspector go out and inspect the facilities.²²²

Another senior underwriter reported that:

We have our loss-control team that will go visit our higher premium farms, larger farms, or anything that is doing any type of complex operation. . . . Oftentimes, an underwriter will go with them. I would say our agents have typically visited the majority of the farms that they do business with, you know, with the exception of some of the very tiny, very basic farms that we write. Anything medium size or anything that is doing any type of more complex operation, our agents have generally been on the premise.²²³

A senior underwriter at a third carrier reported that:

typically, most of the underwriting process is just done via photos that are sent in, loss runs, Googling the address, looking at websites, and looking at Facebook. Somebody, where there is more of a food safety concern, is looking at Yelp, employee reviews. And then if we do have concerns in terms of leafy greens or a higher exposure, we will sometimes send an inspector out there to take a look at it.²²⁴

Thus, underwriters vary in the level of scrutiny that they use in assessing farm risks. For smaller, simpler, lower-risk operations, with relatively low-premium policies, underwriters rely primarily on written applications, personal interviews, and internet searches—activities that can be accomplished without leaving the office. For larger, more complex, higher-risk enterprises, with higher premium policies, underwriters also employ on-farm inspections.

C. Underwriting Criteria

Underwriters vary also in the sources and depth of their knowledge about food safety risks associated with fresh produce farming. Some underwriters know very little about food safety and employ crude proxies for risk, such as farm size, on the theory that more sales mean more risk.²²⁵ At the other end of the spectrum, other underwriters study government regulations, industry standards, and academic research to discern the relative risk associated with different farming practices.²²⁶ In between are underwriters who depend on media coverage of outbreaks to classify

222. Telephone Interview with Underwriter B, *supra* note 179.

223. Telephone Interview with Underwriter I, *supra* note 151; *see also* Telephone Interview with Underwriter M, *supra* note 203 (“We do some pre-quote, risk-management inspections. So, before we even are willing to release the quote for a lot of this, we would want our risk managers on site to make sure that they feel that it is an insurable risk for us.”).

224. Telephone Interview with Underwriter N, *supra* note 149.

225. *See infra*, notes 229–32 and accompanying text.

226. *See infra*, notes 250–56 and accompanying text.

some types of produce or operations as high-risk.²²⁷ Underwriters also rely on their general impressions and instincts about how carefully farming operations are conducted.²²⁸ All this variation means that underwriting criteria will differ among insurers.

One common underwriting criterion is farm size—measured by sales revenue or acreage under cultivation—which underwriters use to estimate liability exposure and to price premiums.²²⁹ “Sales are a really big factor in the underwriting process for a raw product,” explained one underwriter.²³⁰ “The odds that [a farmer] might have a problem would increase with the more sales he has. The fewer sales he has, the less risk we see in the marketplace.”²³¹ Another underwriter reported that for “farm liability, we rate . . . on acreage.”²³²

Some underwriting guidelines consider the relative contamination risk of different types of crops. One underwriting manager explained that his company asks: “What is the product? Is it something that is more susceptible to disease or bacteria?”²³³ A second senior underwriter stated, “we look at levels of risk by food type. For example, leafy greens are definitely a higher risk than a jar of peanut butter.”²³⁴ According to a third underwriter, “Pricing is going to vary based on the type of product being sold. If it’s leafy greens, which definitely have a track record of *Salmonella*, it’s going to be more expensive. . . . That’s driven by the hazard risk of the product being sold.”²³⁵ Underwriting guidelines sometimes set a threshold for high-risk crops. “We look at the proportions of exposure,” explained one underwriting manager. “For leafy greens, is that 5 percent of the operation or 95 percent?”²³⁶ One company’s underwriting guidelines specify that underwriters should decline coverage of farms growing multiple crops if leafy greens are more than fifteen percent of their total acreage.²³⁷

227. See *infra*, notes 244–46 and accompanying text.

228. See *infra*, notes 257–62 and accompanying text.

229. Telephone Interview with Underwriter B, *supra* note 179; see also Telephone Interview with Consultant B, *supra* note 175; Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Underwriter N, *supra* note 149; Telephone Interview with Agent B, *supra* note 161; see, e.g., *Vendor/Producer Insurance*, *supra* note 154 (insurance application that asks applicants about estimated gross sales); *FMC and Campbell Risk Management*, *supra* note 177 (structuring farmers market insurance coverage based on gross sales).

230. Telephone Interview with Underwriter J, *supra* note 152.

231. Telephone Interview with Underwriter B, *supra* note 179; see also Telephone Interview with Agent A, *supra* note 181; Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Broker B, *supra* note 181; Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent C, *supra* note 148.

232. Telephone Interview with Underwriter N, *supra* note 149.

233. Telephone Interview with Product Developer A, *supra* note 163.

234. Telephone Interview with Underwriter M, *supra* note 203.

235. Telephone Interview with Underwriter B, *supra* note 179; Telephone Interview with Underwriter C, *supra* note 152 (“The higher hazard the product, the higher the price for liability coverage and the less limits are available. A common example of a high hazard product is leafy greens.”).

236. Telephone Interview with Product Developer A, *supra* note 163.

237. Anonymous Underwriting Guidelines (Jan. 30, 2019) (unpublished manuscript) (on file with author). These guidelines are considered proprietary information and were shared with the author on the condition that the identity of the company to which they belong is not disclosed.

Underwriters characterized crops grown outdoors on the ground and typically consumed raw as high risk. “We are very cautious around leafy greens, broccoli, spinach—any type of vegetable or green that we know generally will grow on the ground,” explained one senior underwriter.

They have closer contact with bacteria and water that may have bacteria in it, but the other issue is that they are generally eaten raw. . . . The likelihood of an outbreak illness is lessened if it is something that is generally eaten after being fully cooked. Those are the thought processes we go through as we are determining what we consider higher exposure in an agriculture product.²³⁸

Another underwriter similarly reported, “if you’re growing vegetables that are almost always cooked before they are eaten, that would be a low-risk type of produce, because when you cook the food, you are going to cook out most of the pathogens that might be in it.” By contrast, “if the type of food you’re growing is mostly eaten raw—lettuces and a lot of other leafy greens—then that’s going to be higher risk. . . .”²³⁹

Some underwriters focus on water quality. “We are finding that irrigation methods are a good underwriting tool to find out whether or not a risk is acceptable,” explained one senior underwriter, “We have a chart, and we look at things like . . . Are they irrigated? If they are irrigated, how are they irrigated? Are they using sprinklers? Are they using drip irrigation? Are they using flood irrigation? All of those things will impact an underwriter’s decision whether to write the farmer’s policy or what kind of price they might give.”²⁴⁰

Underwriters also evaluate risk based on the proximity of a farming operation to sources of contamination, like concentrated animal feeding operations.²⁴¹ “The underwriters don’t always know if there is a large cattle or

238. Telephone Interview with Underwriter I, *supra* note 151.

239. Telephone Interview with Underwriter B, *supra* note 179; *see also* Telephone Interview with Underwriter L, *supra* note 178 (stating presence of a “kill step,” such as cooking, relevant to distinguishing low from high-risk foods).

240. Telephone Interview with Underwriter J, *supra* note 152; *see Draft Romaine Task Force Meeting Summary*, *supra* note 95 (suggesting that the use of ground water instead of surface water or drip irrigation rather than flood irrigation can reduce microbial loads on plants in the field); Tay Fatke, *Benefits of Utilizing Drip Irrigation for Food Safety*, CAROLINA FARM STEWARDSHIP ASS’N (Dec. 22, 2020), <https://www.carolinafarmstewards.org/benefits-of-utilizing-drip-irrigation-for-food-safety-best-practice/> [<https://perma.cc/F6CJ-7755>] (explaining that irrigation methods such as drip irrigation that do not involve irrigation water contacting the edible portion of the plant reduce the risk of microbial contamination); *see also*, Suslow, *Standards for Irrigation*, *supra* note 88, at 3–4 (discussing water quality implications for different irrigation methods); *Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens*, CALIFORNIA LGMA (Aug. 20, 2020), https://lgmatech.com/wp-content/uploads/2020/08/CA-LGMA-Metrics-August-2020_Final_Clean_9-18-20.pdf [<https://perma.cc/TC2D-98PP>] (detailing the most recent LGMA metrics for preharvest agricultural water and distinguishing between different methods of delivery).

241. *Draft Romaine Task Force Meeting Summary*, *supra* note 95 at 3 (discussing the risk of agricultural water contamination from neighboring animal feedlots); *see also*, Bill Marler, *Captain Obvious: Nearby Cow Shit Can Cause E. coli Outbreaks in Leafy Greens*, MARLER BLOG (May 21, 2020), <https://www.marlerblog.com/lawyer-oped/captain-obvious-nearby-cow-shit-can-cause-e-coli-outbreaks-in-leafy-greens/> [<https://perma.cc/D82P-2EK4>].

livestock farm near the vegetable grower,” elaborated one senior underwriter, “but that is one thing that our loss control reps should be looking at when they go out.”²⁴² Another factor mentioned was the likely consumers’ vulnerability to foodborne illness, citing, for example, the elderly or infants.²⁴³

Media coverage of outbreaks informed underwriters’ classification of certain types of crops as high-risk. As examples of high-risk crops, they frequently cited leafy greens, sprouts, melons, and tomatoes—all of which have been associated with high-profile outbreaks. One underwriting manager explained, “we avoid the products that are known to be most susceptible . . . the ones that have the outbreaks more often that we hear about in the media and we see through our different sources.”²⁴⁴ This underwriting manager also described how she and her colleagues have news feeds that cover food safety issues.²⁴⁵ Others mentioned that they also obtained information from trade associations and university extension services.²⁴⁶

In addition to farm size and crop type, underwriters investigate whether an applicant has ever recalled a product or been sued for a food safety failure.²⁴⁷ Underwriters typically ask the applicant directly and also examine the applicant’s website, and search public records for this information.²⁴⁸ Although recalls are rare and lawsuits are even rarer, some underwriting guidelines include them as a basis for declining coverage.²⁴⁹

Underwriters also look at regulatory compliance and standards conformity. According to a senior claims manager at one company, underwriting large agribusiness clients involves “surveying the actual operation to determine how well they comply with the various industry, proprietary, and state safety controls.”²⁵⁰ For any type of processing, according to one senior underwriter, applicants “would need to have a commercial grade kitchen according to their local codes with regard to food

242. Telephone Interview with Underwriter B, *supra* note 179; Telephone Interview with Underwriter J, *supra* note 152 (“If there are feedlots or cattle operations nearby, that would be something that we look at.”).

243. Telephone Interview with Underwriter M, *supra* note 203 (elderly); Telephone Interview with Agent E, *supra* note 191 (baby food).

244. Telephone Interview with Underwriter I, *supra* note 151.

245. Telephone Interview with Underwriter I, *supra* note 151.

246. See Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent A, *supra* note 181.

247. See Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Broker B, *supra* note 181; Telephone Interview with Agent C, *supra* note 148; Telephone Interview with Agent D, *supra* note 174; Telephone Interview with Underwriter I, *supra* note 151; Telephone Interview with Underwriter B, *supra* note 179; Telephone Interview with Underwriter M, *supra* note 203; Telephone Interview with Underwriter N, *supra* note 149; Telephone Interview with Underwriter E; Telephone Interview with Underwriter C, *supra* note 152; Telephone Interview with Loss Control Specialist B, *supra* note 179.

248. Telephone Interview with Underwriter L, *supra* note 178; Telephone Interview with Underwriter M, *supra* note 203.

249. Anonymous Underwriting Guidelines, *supra* note 237.

250. Telephone Interview with Claims Manager A, *supra* note 196; see also Telephone Interview with Underwriter M, *supra* note 203 (“We want to make sure they abide by rules and regulations set forth through either FSMA, the FDA or HACCP.”); see, e.g., *Vendor/Producer Insurance*, *supra* note 154 (insurance application that asks applicants about regulatory compliance).

preparation and sales” as verified by local inspectors.²⁵¹ “If it is a larger operation, then we send a loss prevention inspector out to take a look, [and] they will have a list of things that they are looking for. We have a form that they fill out about food safety.”²⁵² The form is a checklist which includes technical scrutiny of the applicant’s food safety risk management program.²⁵³ Underwriters may also review an applicant’s private food safety audits.²⁵⁴

For smaller operations, underwriters may rely on proxies for regulatory compliance and standards conformity. “We don’t have a checklist,” explained a senior underwriter who works with small farms. Underwriters rely instead on farmers membership in state commodity marketing programs that require demonstrated compliance with government regulations and industry standards. The same senior underwriter elaborated:

You can look at, for example, the Virginia Grown or the Georgia Grown programs. That stuff does a lot of the underwriting because they hold their producers accountable as a condition of being in the program. . . . Pennsylvania has one called Pennsylvania Preferred, and Maryland has one called Maryland’s Best. . . . It is a good indication, a kind of intangible. It is not a make-or-break type thing, but it is always nice to see. You are putting in the extra effort to try to brand your product. I don’t know if there’s really a correlation [with food safety risk], like having a HACCP program or SQF [Safe Quality Food] certification, but it helps.²⁵⁵

Along these lines, underwriters also consider how long the applicant has been in business. In some cases, for small farms or processors, companies require applicants to self-certify compliance with all relevant government regulations, and compliance is incorporated into the policy as a condition of coverage.²⁵⁶

Finally, underwriters rely on their general impressions and instincts. This is especially true for smaller farms. One senior underwriter described the underwriting process in the following terms:

It is not formalized. We utilize field underwriters. Our field underwriters tend to be long tenured, more experienced underwriters. They are out there in the field, meeting with folks, and we have developed confidence in them to be able to do that and assess risk. There is no real checklist per se—that we have to see A, B, and C in place to ensure a specific food safety risk. They will go out and meet with the farmer. They will talk with him again. “How long have you been doing this?” “What’s your

251. Telephone Interview with Underwriter B, *supra* note 179.

252. Telephone Interview with Underwriter B, *supra* note 179.

253. The form includes sanitation and HACCP measures. Anonymous Underwriting Guidelines, *supra* note 237.

254. Telephone Interview with Claims Manager A, *supra* note 196.

255. Telephone Interview with Underwriter H, *supra* note 150; *see also* Telephone Interview with Consultant B, *supra* note 175.

256. Telephone Interview with Agent E, *supra* note 191; *see, e.g., Vendor/Producer Insurance*, *supra* note 154.

experience with a specific endeavor?” They check out the cleanliness of the operation. “Do you have safety guides?” “Do you have training?” “Do you have employees?” “Are your employees experienced with this?” “How big of an operation is it?” “How big is your marketing web?” “Do you advertise on the Internet?”. . . . It is less formal, but our field underwriters, who are trained, really know the questions to ask and the questions to follow up on, once an insured communicates with us what he or she is doing. . . . Our target market is small to medium-sized family type farms, and not the really the high production, large-scale farms.²⁵⁷

A second senior underwriter also emphasized the importance of the “experience level of management and employees.”²⁵⁸ Several underwriters mentioned general hygiene and sanitation.²⁵⁹ As one agent explained: “Housekeeping of the premises says a lot, usually, about the quality of the risk. And it is probably one of the easiest things to look at. . . . You are going to look at the facilities. Are the facilities clean?”²⁶⁰ “It’s kind of subjective,” summed up another senior underwriter.

When I go out, it is more of just a relationship-type thing, and I ask them, “What’s going on?” and “Tell me about your business.” You learn a little bit about the way they manage their business, their pride of ownership, what they are doing differently from other people in the same industry. And, more or less, you just kind of get a gauge on their attitudes and their approach to managing their farm or other commercial agribusiness. You know, once you get that information, a lot of these other things fall into place.²⁶¹

This type of generalized assessment also takes place in recall coverage for large producers. As a senior underwriter explained:

We want specifics about their quality control—the steps they are taking for traceability . . . their quality control manual and their product recall plan. . . . We are trying to figure out exactly how thorough they have been in terms of developing quality control. If we get a recall plan that is one-page long and it looks like it came off the FDA recommended plan, we know right off the bat that these guys have not put a lot of effort into it. If we get a two-page quality control manual, we are, like, “Okay, but there’s a lot missing here.”²⁶²

257. Telephone Interview with Underwriter A, *supra* note 153.

258. Telephone Interview with Product Developer A, *supra* note 163; *see also* Telephone Interview with Underwriter A, *supra* note 153 (“What’s their experience? Are they just starting up this operation or have they been involved in it for thirty years?”).

259. Telephone Interview with Underwriter M, *supra* note 203; Telephone Interview with Underwriter B, *supra* note 179.

260. Telephone Interview with Agent B, *supra* note 161.

261. Telephone Interview with Underwriter H, *supra* note 181.

262. Telephone Interview with Underwriter G, *supra* note 179.

Because of the infrequency of claims, as described in Part III, underwriters in the farm and agribusiness sectors lack the loss history necessary to develop actuarial data regarding food safety risk. As the interviews quoted in this Part suggest, they rely instead on rules of thumb such as gross sales and acreage limits, news reports and public records about high-profile outbreaks, compliance records and private certifications, and personal impressions and intuitions about the quality of farmers' risk management. As the recall underwriter quoted above explained, "[w]e don't have the benefit of years and years of liability losses. . . . Recall does not have that kind of predictive modelling yet, so it has a lot to do with . . . experience in the marketplace, people who have been doing it for a while. . . ." ²⁶³ When asked about the maturity of underwriting practices in the field compared to more developed types of insurance such as fire and auto, she replied, "somewhere between newborn and adolescent."²⁶⁴

For even prominent insurance providers in the farm and agribusiness sectors, attention to food safety risks in farming operations is an emerging aspect of underwriting. "It's something I think has gone under the radar for a really, really long time," admitted one senior underwriter with twenty years of experience.

If you look at the fact that, even on farm liability, we rate only based on acreage, that tells you a lot. If it's ten acres of corn, it's going to be treated the same as ten acres of leafy greens—even if that's just feeder corn versus leafy greens that are going to land on your table. So that alone tells me that in the past, there has not been much concern for food safety. A lot of the losses we tend to see are going to be commodity losses in terms of hay fire, potato spoilage—an insured hauling potatoes and flips a truck or something like that. Those are typically where a lot of our losses come from. But I think we are getting into a situation here we are seeing more and more food safety concerns.²⁶⁵

Although most underwriters reported that they rely on more than merely a single crude proxy for food safety risk like acreage, they shared the view expressed here that food safety is a newly emerging concern.²⁶⁶ This growing attention to food safety risks has begun to express itself in efforts to reduce those risks.

D. Risk Reduction Techniques

Farm and agribusiness carriers employ a variety of techniques to reduce the risk of food safety failures in fresh produce operations.

263. Telephone Interview with Underwriter G, *supra* note 179; *see also* Telephone Interview with Underwriter E, *supra* note 247 (expressing a similar view).

264. Telephone Interview with Underwriter G, *supra* note 179.

265. Telephone Interview with Underwriter N, *supra* note 149.

266. Telephone Interview with Underwriter G, *supra* note 179; Telephone Interview with Underwriter E, *supra* note 247; Telephone Interview with Consultant A, *supra* note 174; Telephone Interview with Agent F (Mar. 2020).

1. Risk Selection and Premium Pricing

Insurance carriers use risk selection and premium pricing as leverage to encourage farms to improve their food safety efforts. “We avoid the products that are known to be most susceptible and that have outbreaks more often that we hear about in the media, and we see through our different sources,” reported a senior underwriter at a major carrier.²⁶⁷ “So, we do not write many leafy green farms. We do not write many melon farms. In general, we will avoid those unless we see something that we truly consider best in class that has their safety management top notch.”²⁶⁸

To incentivize farms to meet this high standard, she explained, “the underwriter does have a little bit of discretionary authority to influence pricing up or down based on specific risks. . . . First of all, we want to see the appropriate safety measures in place, to even consider entertaining the business, and then that would further play into [premium] credits or debits.” For example:

if we like the risk, but we definitely see some opportunity where they need to improve some of their safety measures or make some changes around their water sourcing, that’s probably something we’re going to apply pricing debits on until they make those changes and then we would remove them to make the premium more attractive. And then vice versa, if we have a risk that we have decided to write and they have excellent safety measures in place, we may issue a credit on the policy to reflect that mitigation of risk.²⁶⁹

A senior underwriter at another major carrier similarly explained that

a risk may be ineligible because it doesn’t risk manage well, or they’re not willing to put some of the procedures in place that we would require. Or you may have some that are willing to do it; they just don’t have it in place now. That would be something we would take into account when we are pricing the account.²⁷⁰

Risk selection and premium pricing are ongoing. According to a loss control specialist at a leading carrier, his office periodically sends risk management experts to review clients’ operations.

After a policy is issued . . . if the risk management consultant goes out and identifies that there is risky behavior going on . . . he will make recommendations . . . to reduce that exposure and then

267. Telephone Interview with Underwriter I, *supra* note 151.

268. *Id.*

269. *Id.*

270. Telephone Interview with Underwriter M, *supra* note 203; *see also* Telephone Interview with Agent F (Mar. 2020) (“[P]art of the process of the private insurance industry now . . . they don’t just say ‘okay, you got it.’ They come out, look over your farm and take pictures and say you’re going to be high-risk because of this and this or this, and so your premium is going to be that. But if you clean these things up, then we can give you a reduced premium. And that’s the way it is done. And so, they try to decrease the risk of what they’re insuring.”).

report back to the underwriter about whether those recommendations were followed. If the client does not follow the recommendations, that may affect their premium upon renewal or their actual renewal.²⁷¹

Agents also play a role in leveraging risk selection to encourage farmers to reduce food safety risk. One agent explained how she counsels farmers to conduct their business in ways that fit the risk appetite of insurance carriers.

I tell my farmers, “Come talk to me while you are in the incubation stage to make sure your idea is insurable.” . . . The prudent thing is training the farmer to understand the parameters of the insurance industry, rather than just saying that they cannot get the insurance. . . . “Let’s start with where the insurance industry is and meet them where they are at.” That’s good business relations.²⁷²

A senior underwriter explained how agents and brokers perform a gatekeeping function using risk selection. “The underwriters work with our agents and brokers to communicate what our appetite is, and then they are out there trying to find risks that would fit our appetite, and those are the ones they submit to our underwriters to review and assess the exposure and the risk.”²⁷³

2. Contract Terms

In addition to risk selection and premium pricing, farm and agribusiness carriers use contract terms—for example, coverage exclusions and deductibles—as incentives for policyholders to reduce the risk of losses.²⁷⁴ According to one claims executive, some policies include warranty terms, under which a claim is covered only if the company meets the terms of the warranty. For example, “you [the produce company] warrant that you are getting third-party inspections on a quarterly basis and, if you are not, then there is either no coverage or reduced coverage.”²⁷⁵ Some policies also include exclusions for high-risk products, such as raw milk, but this is rare for fresh produce.²⁷⁶ Coverage terms also sometimes include deductibles, which encourage policyholders to reduce the risk of losses.²⁷⁷

The use of contract terms to reduce food safety risk is not universal. Many agents, brokers, underwriters, loss control specialists, claims adjusters, and product managers interviewed for this study reported that farm and commercial liability

271. Telephone Interview with Loss Control Specialist A (May 2015).

272. Telephone Interview by research assistant Lillian Henry with Broker D (Sept. 2019).

273. Telephone Interview with Underwriter I, *supra* note 151.

274. Baker & Swedloff, *supra* note 23, at 1420; Ben-Shahar & Logue, *supra* note 14, at 208.

275. Telephone Interview with Claims Manager A, *supra* note 196.

276. Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Claims Manager B (Aug. 27, 2013).

277. Telephone Interview with Loss Control Specialist B, *supra* note 179.

policies do not generally contain exclusions related to food safety.²⁷⁸ They also said that deductibles are very rare in such coverage, especially for small farms.²⁷⁹

3. Loss Control

Insurers provide loss control advice to farmers to reduce the risk of food safety failures. “Any time our field underwriters are meeting with somebody . . . and they see areas where we can help . . . improve safety, we encourage them to do so,” explained one senior underwriter.²⁸⁰

It is not just a process of “I am going to go out there to see whether this is something we want to insure or not.” We have had a lot of conversations with folks where we say, “This is not something that we can take home at this point, but if you’re willing to work with us some and correct A, B, and C, give us a call back. This is how we can put you in a better position even outside of an insurance conversation. We can help put you in a better position to protect yourself from a liability claim.”²⁸¹

Two other senior underwriters who work together described how loss control experts provide “coaching” to farmers. According to one, “There are opportunities where we can step in and say, ‘Maybe you can separate that peanut butter and lettuce production. And then you would lower your potential risk.’”²⁸² The second added,

Our risk management team comes out with recommendations. Some are insurability recommendations, meaning they have to fix that, or they are not a risk we want to write. Some are just a nice-to-have type of thing or are just there to help them. Basically, we want to just help them, because it obviously helps us not have losses but also helps them be the best that they can be in their business.²⁸³

Loss control advice is more common for policies that have high premiums. “We set aside a portion of the premium that our clients pay us for what we call ‘risk

278. See Telephone Interview with Underwriter A, *supra* note 153; Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Broker B, *supra* note 181; Telephone Interview with Underwriter I, *supra* note 151; Telephone Interview with Underwriter J, *supra* note 190; Telephone Interview with Consultant B, *supra* note 175; Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Underwriter N, *supra* note 149; Telephone Interview with Underwriter C, *supra* note 152.

279. See Telephone Interview with Product Developer A, *supra* note 163; Telephone Interview with Agent B, *supra* note 161; Telephone Interview with Underwriter J, *supra* note 190; Telephone Interview with Consultant B, *supra* note 175; Telephone Interview with Agent E, *supra* note 192; Telephone Interview with Loss Control Specialist B, *supra* note 179; see, e.g., *Coverage Details, FOOD LIABILITY INSURANCE PROGRAM* (Apr. 19, 2021), https://www.fliprogram.com/coverage_details [<https://perma.cc/6ALM-JY3R>].

280. Telephone Interview with Underwriter A, *supra* note 153.

281. Telephone Interview with Underwriter A, *supra* note 153.

282. Telephone Interview with Underwriter M, *supra* note 203.

283. *Id.*

engineering work,” explained a senior underwriter of product contamination coverage. This process involves hiring an outside consultant to “audit overall food safety systems, looking for gaps or areas of improvement, and then spending the money that we’ve set aside working with [the client] to focus on the gaps.”²⁸⁴ An independent loss control consultant reported:

I do work for insurance companies evaluating food safety risks of different companies that are applying for a product contamination policy. I am asked to go in and evaluate their food safety measures. And then, based upon that, [the insurer] may provide them incentives in reducing the risk by implementing some programs. The insurance company in that fashion is looking at reducing some of those risks in various operations.²⁸⁵

One underwriter at a product contamination carrier explained that her company dedicates 10 percent of premiums to “pre-incident” loss control services, which can cost tens of thousands of dollars per year.²⁸⁶

Smaller premium policies do not generally support much loss control advice. As an independent underwriting consultant explained about coverage priced for smaller operations: “The premium here is not going to drive enough interest for us to do a whole lot of services on the carrier side of things. So, it is more template underwritten. . . .”²⁸⁷ An agent similarly commented that: “If you are big enough or you are doing the kind of thing that needs you to have general liability in addition to the farm liability, then those are the people who are getting those services. The 40 acres of peaches—probably not.”²⁸⁸ These comments indicate that the smaller the farm, the more standardized the underwriting process and the fewer the risk services that accompany coverage.²⁸⁹

4. Public Education

Insurance agents and carriers provide public education to highlight the importance of compliance with food safety regulations and standards. Some agents post blogs or speak on panels aimed at educating farmers about the risk of contamination, liability exposure, the importance of regulatory compliance, and the

284. Telephone Interview with Underwriter E, *supra* note 247.

285. Telephone interview with Consultant C (Jan. 21, 2015).

286. Telephone interview with Underwriter G, *supra* note 179.

287. Telephone interview with Consultant B, *supra* note 175.

288. Telephone interview with Agent A, *supra* note 181. A similar observation was made by others. *See also* Telephone interview with Agent C, *supra* note 148; Telephone interview with Agent E, *supra* note 191; Telephone interview with Underwriter C, *supra* note 152.

289. Telephone interview with Data Analyst A (June 5, 2019).

need for adequate coverage.²⁹⁰ Farmers Union, affiliated with leading farm insurance carrier Farmers Union Insurance, offers trainings to farmers in FSMA compliance.²⁹¹

VI. MANAGING UNCERTAINTY

Food safety regulation is characterized by a high degree of uncertainty. The inability of public health officials to identify the root causes of outbreaks associated with fresh produce has left experts in government, industry, and academia unable to evaluate the impact of current food safety standards on human health outcomes.²⁹² The infrequency of claims and the lack of robust actuarial data means that insurance underwriters are no better equipped to verify the efficacy or efficiency of current food safety standards in reducing foodborne illness. Insurance carriers merely rely on the professional judgments of experts outside the insurance industry who themselves lack scientific evidence to justify many aspects of the food safety measures they prescribe.²⁹³

Although insurance underwriting does not advance knowledge about the efficacy and efficiency of current food safety standards, it does play a role in encouraging farmers to implement them. The interviews presented in this Article illustrate how insurance companies determine eligibility, set premiums, structure coverage, give loss prevention advice, and provide public education with the aim of reducing the risk of contamination that could give rise to foodborne illness claims. The underwriting criteria that support these risk reduction efforts include compliance with government regulations and conformity to industry guidelines. Thus, insurance underwriting practices incentivize adherence to current food safety standards.

A. The Impact of Insurance on Food Safety

This analysis prompts at least two important questions about the contribution of insurance to food safety. How big a role does insurance play in food safety compliance? What is the value of compliance given uncertainty about the effectiveness and efficiency of current food safety standards?

290. See, e.g., *Producer Liability: Understanding & Communicating Vendors' Risks & Insurance Needs*, FARMERS MKT. COAL. (2011), https://farmersmarketcoalition.org/wp-content/uploads/2013/10/Vendor_Insurance_Webinar_2011.pdf [<https://perma.cc/Z794-KEBT>]; Reuben Dourte, *Small Farm Product Liability: Coverage for Your Farm Products*, SMALL FARM QUARTERLY (July 14, 2017), <https://smallfarms.cornell.edu/2017/07/small-farm-product-liability-coverage-for-your-farm-products/>.

291. *NFUF to Aid Local Produce Growers and Processors with FSMA Compliance*, NATIONAL FARMERS UNION FOUNDATION (Aug. 24, 2016), <https://pafarmersunion.org/2016/08/24/nfuf-fsma-compliance/> [<https://perma.cc/2HPV-2HNM>].

292. See *supra* Part I.B. for a detailed analysis of how little is known about the efficacy and efficiency of food safety efforts in the fresh produce sector; see LYTTON, *supra* note 3, at 163–77, 232–34, 240–41. For an explanation of why root cause analysis is so difficult, see *supra* notes 133–36 and accompanying text.

293. See *supra* Part I.B.; see, e.g., Suslow, *Standards for Irrigation*, *supra* note 88 (describing the speculation underlying quantitative metrics for agricultural water quality standards); Suslow, *Risk-based Approach*, *supra* note 91 (emphasizing that “there is no justification for a strict quantitative standard” for agricultural water); Carr, *supra* note 2, at 9 (concluding that “we lack a scientifically-validated measure of what concentration of bacteria in water it takes to contaminate produce and, in turn, how that corresponds to consumer risk.”).

1. *The Role of Insurance*

Three dozen interviews do not constitute robust evidence that insurance plays a significant role in regulating food safety risk in the fresh produce sector. However, these interviews do open the black box of underwriting practices to reveal how insurance professionals help farmers manage food safety risk. The interviews indicate broad variation in the resources available to carefully select risks and price premiums, design coverage terms with food safety risk in mind, provide loss control inspections and counseling, and educate policyholders. Coverage with lower premiums priced to make it affordable for small farmers typically involves formulaic and cursory underwriting decisions. Although such policies may include some incentives to reduce risk—such as self-certification of regulatory compliance—the business model for them is low overhead, high volume, and limited client services. By contrast, the higher premiums of more robust coverage, especially customized recall insurance, typically fund more intensive underwriting efforts and sophisticated loss control services by professional food safety consultants.

Some forms of insurance underwriting focus merely on reducing clients' exposure to litigation without attempting to prevent the harms that give rise to legal claims.²⁹⁴ This does not appear to be the case for food safety coverage. The picture that emerges from this study suggests that food product liability insurance and product contamination insurance aim to reduce the risk of microbial contamination and prevent foodborne illness.

There are reasons to suspect that this role for insurance will grow in the future. Advances in outbreak investigation and more frequent root cause analysis will likely, over time, increase the liability exposure of farms and boost demand for more robust liability and recall insurance.²⁹⁵ Moreover, expanding liability exposure among commercial buyers of fresh produce—distributors, retail stores, restaurants, food service providers, and farmers markets—is likely to increase the prevalence of requirements that growers have sufficient coverage to absorb potential liability, recall products, and indemnify buyers.²⁹⁶ Educational and sales efforts by agents,

294. See Talesh, *Insurance Companies*, *supra* note 27 (contrasting employment practices liability insurance—"bad" insurance as regulation aimed merely at reducing exposure to litigation—to cyber insurance—"good" insurance as regulation aimed at reducing the risk of data breaches).

295. For an analysis of advances in outbreak investigation, see LYTTON *supra* note 3, at 186–89 (detailing improvements in pathogen typing and foodborne illness surveillance), 225–27 (discussing improvements in traceability); see *Feds Plan to Begin Testing Research Program with Romaine Lettuce in Ariz.*, FOOD SAFETY NEWS (Feb. 5, 2021), <https://www.foodsafetynews.com/2021/02/feds-plan-to-begin-testing-research-program-with-romaine-lettuce-in-arizona/> (reporting new FDA initiative for testing and tracing of leafy greens); Bryan Hitchcock, *What We Learned from the Traceability Pilots*, FOOD SAFETY MAGAZINE (Jan. 26, 2021), <https://www.food-safety.com/articles/6938-what-we-learned-from-the-traceability-pilots> (describing a 2020 multi-stakeholder project to improve traceability); *A Guide for Conducting A Food Safety Root Cause Analysis*, Pew Charitable Trust (Mar. 24, 2020), <https://www.pewtrusts.org/en/research-and-analysis/reports/2020/03/a-guide-for-conducting-a-food-safety-root-cause-analysis> (analyzing the implications of improved root cause analysis); see also Carr, *supra* note 2, at 12 (noting recent increases in federal funding for outbreak surveillance and investigation) and *Industry Leaders Expand Produce Safety Research*, FOOD SAFETY MAGAZINE (Jan. 20, 2021), <https://www.food-safety.com/articles/6935-industry-leaders-expand-produce-safety-research> (reporting recent trade association investments in food safety research).

296. On insurance requirements imposed by buyers on fresh produce growers, see Boys *Linking supra* note 134, and Boys *Food Product, supra* note 138.

brokers, and carriers may also increase the willingness of some farmers to pay for more expensive policies and the risk management services that they include. As one veteran underwriter of product contamination insurance explained:

[I]t takes two or three years to sell a policy to a new buyer. The first year, they will look at it and go, “Holy [cow]! How much do you want for this? No way. I’m walking away.” And then the second year, they’re like, “You know what? I think we really need this, but I just don’t have the money in the budget.” And the third year, they come by and they’re like, “We want to buy. We’ve budgeted for it.” And that is how we sell. . . . It’s a long-term [pipe]line. And those that are successful are the ones that are building those [pipe]lines.²⁹⁷

However, higher premiums for commercial liability coverage and more robust recall policies are likely to remain a significant barrier for many small farmers.²⁹⁸ One solution might be organizing small farmers into risk pools capable of generating sufficient premiums to support risk management services that could take advantage of economies of scale. Group insurance along these lines might be organized through trade associations or marketing agreements.²⁹⁹ Another option might be providing government subsidies for food-safety-related coverage, along the model of federal crop insurance.³⁰⁰

2. *The Value of Insurance*

Any complete assessment of insurance underwriting’s contribution to reducing the risk of foodborne illness requires not merely an appreciation of its capacity to boost compliance but also an evaluation of the efficacy and efficiency of the standards it seeks to enforce. This Article does not provide such an evaluation. To be fair, this knowledge gap is not unique to insurance. It bedevils analyses of food safety efforts through government regulation and industry supply chain management. Although there is data to suggest that agency guidance from the FDA and the USDA and industry programs like the LGMA have increased investments in food safety on farms and improved compliance rates, there is no data to demonstrate whether those efforts have reduced the incidence of foodborne illness.³⁰¹ Nor is this uncertainty

297. Telephone Interview with Underwriter G, *supra* note 179.

298. See Boys, *Food Product*, *supra* note 138, at 3.

299. Agricultural trade associations are frequently closely associated with insurance providers. See, e.g., FARMERS UNION INSURANCE, <https://farmersunioninsurance.com/about>[<https://perma.cc/N2TA-KRSE>]. Some fresh produce distributors currently organize such risk pools among their suppliers. Markley, *supra* note 134, at 15. One broker offers farmers market insurance using risk purchasing groups, “where business with similar liability risks are able to purchase cost-effective and comprehensive insurance coverage.” *Coverage Details*, *supra* note 279. The Farmers Market Coalition, a trade association, partnered with a broker to similarly create a risk pool that makes farmers market insurance affordable to small growers. *FMC and Campbell Risk Management*, *supra* note 177.

300. I am grateful to Professor Barry Goodwin for this suggestion.

301. For a comprehensive survey of data regarding investments in food safety and compliance rates in the fresh produce sector, see LYTTON, *supra* note 3, at 162–77. For statements from leading experts regarding the lack of data to evaluate the impact of food safety measures on foodborne illness rates, see LYTTON, *supra* note 3, at 232–34.

unique to food safety regulation. In most areas of regulatory policy, analysts lack sufficient data to calculate the return on investment. As Peter Orszag, former Director of the Office of Management and Budget in the Obama administration, and John Bridgeland, former Director of the White House Domestic Policy Council in the George W. Bush administration, explained in 2013: “Based on our rough calculations, less than \$1 out of every \$100 of government spending is backed by even the most basic evidence that the money is being spent wisely. . . . [L]ess than \$1 out of every \$1,000 that the government spends on health care this year will go toward evaluating whether the other \$999-plus actually works.”³⁰²

Although it is not possible to offer a complete assessment, this Article presents evidence that insurance adds significant value to food safety regulation. Insofar as it is desirable to implement government policies and industry standards, insurance incentives and oversight complement the efforts of government agencies and industry associations. Indeed, as the next section discusses, insurance has comparative advantages over government and industry oversight.

Moreover, the contribution of insurance to regulatory compliance and standards conformity is likely to enhance policy evaluation in the future. Policymaking at its best is an iterative process that typically begins with educated guesses based on incomplete information and advances through feedback and learning.³⁰³ Effective implementation and reliable oversight are essential to feedback and learning. Insurance incentivizes farmers to implement current food safety standards in their operations and gives underwriters reason to collect reliable information about compliance.

B. Comparative Institutional Advantages of Insurance

One important way to assess the value of a regulatory approach is by comparing it to alternatives.³⁰⁴ As a compliance mechanism, insurance has an important advantage over government regulation. Insurance is less hampered by resource constraints than publicly funded oversight. As the FDA’s inspection responsibilities expand under FSMA, the agency must contend with limited resources. Its state agency partners face similar budgetary constraints.³⁰⁵ By contrast, as the market for food product liability and contamination coverage grows, insurance companies will collect more premiums from which to fund inspections. For insurers, increasing demand for inspections provides new revenue to pay for them. Consequently, the capacity of insurance companies to oversee food safety on farms far exceeds that of government agencies.

302. John Bridgeland & Peter Orszag, *Can Government Play Moneyball?*, THE ATLANTIC (July/Aug. 2013); *see also*, PETER SCHUCK, WHY GOVERNMENT FAILS SO OFTEN AND HOW IT CAN DO BETTER 20–24 (2014).

303. For elaboration of the idea of policymaking as an iterative process, see FOOD & AGRIC. ORG. OF THE U. N., DEVELOPING EFFECTIVE FOREST POL’Y—A GUIDE 15–16 (2010).

304. On comparative institutional analysis, see ROSS CHEIT, SETTING SAFETY STANDARDS: REGULATION IN THE PUBLIC AND PRIVATE SECTORS 17, 193 (1990); NEIL KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 3–13 (1994); PETER SCHUCK, THE LIMITS OF LAW: ESSAYS IN DEMOCRATIC GOVERNANCE 424 (2000).

305. *See supra* notes 100–10 and accompanying text.

Insurance also has an advantage over the most common form of privately funded oversight in the fresh produce sector—private third-party food safety audits paid for by growers.³⁰⁶ The conflict of interest that arises when growers pay for audits compromises the integrity of those audits and undermines confidence in them.³⁰⁷ Although growers also pay for underwriting inspections, insurance companies have a powerful incentive to ensure that these inspections are rigorous, because the insurer is liable for at the costs of any food safety failure. The business model for insurance company oversight of food safety on farms includes incentives for rigor and reliability that are absent from private third-party food safety audits paid for by growers. Moreover, the interviews suggest that underwriters are motivated not merely to evaluate farmers but also to coach them on how to improve their food safety practices. At their best, underwriting professionals are a private version of the “good inspector” described by Eugene Bardach and Robert Kagan in their influential study of regulatory reform, *Going by the Book*.³⁰⁸

I do not mean to suggest that insurance underwriting is a perfect solution. It is, rather, one of several imperfect alternatives. Insurance comes with its own limitations. For example, underwriting criteria vary considerably in their sophistication—ranging from crude proxies for food safety such as farm size to state-of-the-art studies of contamination risk associated with different irrigation methods.³⁰⁹ Insurance underwriters can also exercise their discretion in discriminatory ways that evade detection by regulators.³¹⁰

Nor do I mean to imply that the choice between government regulation, industry supply chain management, and insurance underwriting are exclusive alternatives. To the contrary, they are highly interdependent. For example, insurance depends heavily on government outbreak investigation to create the liability exposure that generates demand for insurance.³¹¹ Insurance relies also on industry expertise to formulate underwriting criteria.³¹² Insurance is merely one component of a system of interdependent efforts to advance food safety governance through feedback and learning.³¹³

C. Insurance Underwriting in Action

The interviews presented here expose an important shortcoming of relying exclusively on economic theory to explain how insurance as risk regulation works.

306. For an explanation of why private third-party audits of fresh produce growers are typically paid for by growers, see *supra* notes 115–27 and accompanying text.

307. For analysis of why buyers rely on audits paid for by growers and of the resulting conflict of interest, see *supra* notes 116, 127 and accompanying text.

308. EUGENE BARDACH & ROBERT A. KAGAN, *GOING BY THE BOOK: THE PROBLEM OF REGULATORY UNREASONABLENESS* 123–51 (rev'd ed. 2002).

309. See *supra* Part IV.C.

310. Brian J. Glenn, *The Shifting Rhetoric of Insurance Denial*, 34 *LAW & SOC. REV.* 779 (2000) (documenting a variety of discriminatory underwriting practices in assessing eligibility for insurance coverage).

311. See *supra* Part IV.C.

312. See *supra* Part II.

313. For a more detailed analysis of food safety regulation as a complex adaptive system of governance, see LYTTON, *supra* note 3, at 21–22, 152–61, 236–38.

Economic theory explains the logic of insurance as regulation, but it does not suffice to describe how underwriters help their clients manage risk. It is true that, as skeptics have suggested, the infrequency of insurance claims compared to the prevalence of foodborne illness prevents insurers from developing the actuarial data necessary to calculate optimal food safety risk reduction.³¹⁴ Underwriting professionals report that they rely instead on anecdotal sources of information, including agency warning letters and recall notices, conversations with university extension experts, and, especially, newsfeeds. In interviews, the most frequently mentioned examples of high-risk crops were leafy greens and cantaloupe.³¹⁵ These two crops have become notorious due to high-profile outbreaks, protracted litigation, and large insurance settlements, all of which were extensively covered in the media.³¹⁶ Agents, underwriters, and loss control experts also reported basing their risk assessments on personal intuitions about farmers' competence and their impressions about the observable hygiene and sanitation of farm operations.³¹⁷ Thus, insurance as regulation in the fresh produce sector relies on highly impressionistic underwriting practices. It is far more art than actuarial science.

The absence of robust actuarial data and the general lack of evidence concerning the effectiveness and efficiency of current food safety standards make optimal deterrence a chimera. Consequently, insurance as regulation aims for the more modest goals of regulatory compliance and standards conformity. Regulatory compliance and standards conformity as underwriting criteria in farm and agribusiness insurance are especially important because the dearth of claims means that loss history may not be a reliable indicator of an operation's food safety risk.³¹⁸ Agents, underwriters, and loss control experts reported relying on regulatory compliance and standards conformity as benchmarks for eligibility and taking them into account when pricing premiums. They described warranty terms based on private food safety audit scores, which in turn are a measure of regulatory compliance and standards conformity. In public presentations, agents counseled farmers to comply with regulations and conform to industry standards.³¹⁹ Thus, the professionals implementing insurance as regulation in the fresh produce sector think in terms of improving compliance, not optimizing safety. Their mindset is more administrative than economic.

The statements by underwriting professionals in this study reflect considerable variation in the extent to which insurance companies attempt to manage food safety risk and the sources of information on which they rely. Although typical farm policies include liability coverage for food safety failures, the risk of such a claim is extremely remote and the premiums are modest—which means that underwriters have neither the incentive nor the resources to invest in food safety risk management.³²⁰ By contrast, large brand-conscious agribusiness clients are more worried about admittedly unlikely but potentially catastrophic losses from food

314. See Cogan, *supra* note 34, at 1542–45.

315. See *supra* notes 212, 221–26, 231, 251, 253 and accompanying text.

316. See LYTTON, *supra* note 3, chs. 1, 5–7.

317. See *supra* notes 243–48 and accompanying text.

318. See *supra* notes 237–40 and accompanying text.

319. See, e.g., Farmers Market Coalition, *supra* note 290.

320. See *supra* notes 140–46 and accompanying text.

safety failures, which leads them to purchase more expensive commercial liability and product contamination policies. Underwriters for those policies are more mindful of the potential for large claims as they review applications, price premiums, and design contract terms, and they reserve a portion of the considerable premiums to fund loss control activities.³²¹

The demand for coverage capable of generating sufficient premiums to spread such risk regulation efforts to more farms depends on liability exposure for food safety failures, and that, in turn depends on the development of a more robust outbreak investigation infrastructure. Linking more of the estimated 48 million annual cases of acute foodborne illness in the U.S. to growers whose food safety failures caused them is the key to taking full advantage of the capacity of insurance to regulate food safety risk. Moreover, greater liability exposure would come with an increase in claims, which would generate the type of claims data and enable the kind of actuarial analysis that is common in other forms of insurance for similarly widespread health and safety risks, such as auto and fire.³²² Should the market for food safety coverage mature in this way, underwriting might look more like what economic theory imagines.

The interviews in this Article supplement economic theories of insurance as risk regulation. A sociolegal approach that examines underwriting practices in action reveals that, despite the absence of claims data and the inability to conduct actuarial analysis, insurance underwriters help farmers manage the risk of foodborne illness caused by microbial contamination of fresh produce.³²³ Getting into the weeds of insuring those who work in America's fresh produce growing fields helps to bring abstract theories about insurance as means of risk regulation down to earth.

CONCLUSION

This Article illuminates the role that insurance plays in food safety governance. It documents efforts by insurance companies to reduce the risk of microbial contamination on farms that grow fresh produce. Interviews with underwriting professionals reveal how they incentivize farmers to comply with government regulations and conform to industry standards through risk selection, premium pricing, coverage terms, loss control advice, and public education. Although the extent of these efforts varies considerably, they reveal the transformative potential of insurance to dramatically extend reliable oversight of food safety practices on farms and, by extension, to other sectors of the food industry.

Additional research might explore how organizing risk pools and government subsidies might support the proliferation of insurers' risk management efforts. What lessons are there to be gleaned from other examples of risk pooling, for example, among small municipalities in liability insurance markets?³²⁴ Does federal

321. See *supra* Part IV.C.

322. For a comparison of injury, hospitalization, and death rates for foodborne illness, auto accidents, and fire injuries, see LYTTON *supra* note 3, at 4–7.

323. See Macaulay & Friedman, *supra* note 40.

324. See Rappaport, *supra* note 25, at 1555 (analyzing the role of municipal liability insurance pools in reducing police misconduct); see also *Coverage Details*, *supra* note 279 (citing examples of risk purchasing groups for farmers insurance and farmers market insurance).

crop insurance provide a relevant model for government subsidization of food safety coverage?³²⁵

Food safety regulation in the fresh produce sector is characterized by a high degree of uncertainty. Economic models of insurance as a means of risk regulation assume that insurance tames uncertainty by using claims data and actuarial analysis to price determinable risks and undertake cost-effective efforts to reduce them.³²⁶ Sociological investigation reveals that underwriting professionals are actively engaged in efforts to reduce food safety risks despite a dearth of claims data and lack of actuarial analysis necessary to tame uncertainty. This study suggests that understanding the capacity of insurance to regulate food safety risk in the fresh produce sector, as well as other types of risk more generally, can benefit from careful fieldwork.

325. See ANONYMOUS, R45193, FEDERAL CROP INSURANCE: PROGRAM OVERVIEW FOR THE 115TH CONGRESS 13 (2018), https://www.everycrsreport.com/files/20180510_R45193_c94c4792ac1cba12047bb4080d2e8633ea3acf a8.pdf [<https://perma.cc/G27Y-BS2Y>].

326. See, e.g., Ben-Shahar & Logue, *supra* note 14; Cogan, *supra* note 34; see also Baker, *Uncertainty*, *supra* note 43 (describing and critiquing these economic models of insurance).