

Product Liability and Microbial Foodborne Illness. By Jean C. Buzby, Paul D. Frenzen, and Barbara Rasco. Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 799.

Abstract

This report examines how product liability law treats personal injuries attributed to microbially contaminated foods. The risk of lawsuits stemming from microbial foodborne illness and the resulting court-awarded compensation may create economic incentives for firms to produce safer food. It is not known how many consumers seek compensation for damages from contaminated foods because information about complaints and legal claims involving foodborne illness is not readily accessible, especially for cases that are settled out of court. Reviewing the outcomes of 175 jury trials involving foodborne pathogens, the analysis identifies several factors that influence trial outcomes, while noting that the awards won by plaintiffs tend to be modest.

Keywords: foodborne illness, food safety, jury verdict, personal injury, product liability

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Summary

Food firms, such as manufacturers, retailers, and restaurants, have economic incentives to produce safer food in order to avoid foodborne illness lawsuits and the potential compensation that they may have to pay to ill people and their families. Lawsuits would seem to provide important feedback to these firms about how much they should invest in food safety. However, high transaction and information costs, combined with the structure of the legal system, limit the effectiveness of litigation for compensating ill consumers and providing firms with signals to produce safer food.

This report reviews earlier work on the economic and legal aspects of foodborne illness and examines how product liability law treats personal injuries attributed to contaminated food products. Data on jury trials involving personal injuries allegedly due to foodborne pathogens during 1988-97 were analyzed using multivariate methods to identify the factors related to trial outcomes and the size of damage awards.

Among other findings:

Plaintiffs are unlikely to receive awards in foodborne illness jury trials. Relatively few foodborne illnesses are compensated either through jury awards or out-of-court settlements. Of our sample of 175 foodborne illness lawsuits resolved in court during 1988-97, 31.4 percent resulted in some compensation paid by firms.

Plaintiffs were more likely to win jury trials if they could link their illness to a specific pathogen, and more severe illnesses tended to result in higher awards. Multivariate analyses highlight the importance of plaintiffs' being able to link their illness to a specific foodborne pathogen in order to prevail in court.

Expected monetary compensation from a foodborne illness lawsuit provides a limited incentive to pursue litigation. The median award by juries for injuries due to pathogen-contaminated food products was \$25,560 (1998 dollars). Plaintiffs seldom receive all of an award because part of the award (typically one-third or more) pays legal fees and court costs.

Foodborne illness costs are shared by many sectors of the economy, which limits incentives to firms to produce safer food. Much of the costs of illness borne by people who become ill (and/or their families) are not reimbursed by food firms responsible for an illness. Rather, an ill consumer, his or her relatives, other parties (such as employers, private health insurers, and taxpayers), or some combination of these bear the costs.

Legal incentives probably work better in outbreaks and less well for sporadic cases. Mass outbreaks have greater potential to damage firms, both in terms of financial damages and of damaging a firm's or a product's reputation.

Whether foodborne illness litigation will become more common in the future is unclear. However, class action lawsuits may become more common for outbreaks, which result in many mild and similar illnesses, particularly as identification and documentation of outbreaks improve, as legal expertise in this area grows, and as media coverage of successful class action suits involving consumer products accumulates.

In short, the legal system provides limited incentives for firms to produce safer food. Firms responsible for microbial contamination compensate relatively few people who experience foodborne illnesses. The product liability system provides firms with incentives to control hazards in food primarily when the hazards are easily identifiable, a foodborne illness can be traced to firms, and ill people or their families are compensated by the firms responsible for the contamination.

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Jean C. Buzby, Paul D. Frenzen,
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Chapter 1

Introduction

Food products may cause human illness if they contain microbial pathogens such as bacteria, parasites, fungi, or viruses. Foodborne illness is relatively common in the United States despite intensive efforts by Government agencies and private firms to ensure that food products are safe. The U.S. Centers for Disease Control and Prevention (CDC) has estimated that 76 million foodborne illnesses occur each year in the United States, resulting in 325,000 hospitalizations and 5,000 deaths (Mead et al., 1999). Pathogen-contaminated foods consequently represent an important cause of unintentional injury and death. In fact, contaminated food products caused more deaths each year than the combined totals of all 15,000 products regulated by the U.S. Consumer Product Safety Commission; these products caused 3,700 accidental deaths in 1996 (U.S. Consumer Product Safety Commission, 1998).

This report focuses on foodborne illnesses caused by food-handling errors by firms and the subsequent lawsuits triggered by those errors. Under U.S. product liability law, people harmed by unsafe products (including foods contaminated by microbial pathogens) can take legal action to claim money damages for their injuries. Product liability law specifies when firms are liable for injuries due to their products and are required to pay compensation to injured persons or their survivors. In the case of contaminated foods, product liability is a seemingly powerful mechanism to compensate consumers for economic losses due to foodborne illness, while simultaneously encouraging firms to provide safer food products.

Financial compensation for injuries due to contaminated food products is important because foodborne illness imposes substantial economic costs on society. The annual medical costs, productivity losses, and costs of premature deaths due to five major foodborne pathogens are estimated to be \$6.9 billion (Crutchfield and Roberts, 2000). This estimate represents only a fraction of the total costs due to foodborne illness, which include some costs, such as pain and suffering, that are difficult to quantify and other costs, such as public health expenditures on foodborne disease, that are often overlooked.

Economic theory suggests that firms that make or distribute food products will invest fewer resources in reducing disease-causing contamination if they expect not to pay for injuries due to contaminated products. When firms escape paying compensation, the costs of injuries are borne instead by the consumers who become ill or are shifted to other parties, such as health insurers and employers that provide sick leave benefits. In contrast, if firms expect to bear the costs of injuries due to contaminated products, they will likely invest more resources in reducing contamination. Lawsuits by consumers injured by foodborne pathogens are one signal for firms to spend more for food safety in order to reduce compensation costs. If most firms currently escape paying compensation, increased corporate investments in food safety should lower the overall incidence of foodborne illness and liability costs and result in a more optimal sharing of food safety costs between firms and consumers.

Lawsuits by consumers to recover damages due to foodborne illness can affect the behavior of firms that make or distribute food products. The magnitude of this effect is unknown, however, because information about litigation involving injuries due to food products contaminated by microbial pathogens is scarce. Firms (or their product liability insurers) generally prefer to resolve consumer complaints about foodborne illness outside the courtroom, where they can keep compensation payments confidential, and avoid or reduce adverse publicity about their products. Some lawsuits result in trials, but court statistics do not distinguish cases involving contaminated foods from other product liability cases. Court decisions about liability for foodborne illness may also appear inconsistent because product liability law is complex and the disposition of court cases for contaminated food products is evolving. For example, liability currently varies according to the type of food and pathogen involved in causing illness, reflecting previous court decisions and judges' and juries' assumptions about consumer awareness of the safety of particular foods, as well as existing laws and regulations.

This report examines how foodborne illness is handled under U.S. product liability law. We review liability law for injuries due to food products contaminated by microbial pathogens, and we investigate the incidence of litigation and the characteristics of cases tried in State and Federal courts. Most foodborne illnesses do not result in litigation. Furthermore, only a third of the consumers who go to court receive financial compensation for their injuries. These findings suggest that the direct impact of court decisions on firms is small, although few if any firms are likely to ignore the potential legal consequences of selling contaminated food products that could cause illness or death.

Chapter 2 discusses the characteristics of foodborne illness that may influence litigation involving injuries due to foodborne pathogens. Chapter 3 provides an overview of the general concept of product liability and its economic impacts. For readers interested in Federal and State law regarding liability for foodborne illness, the appendix provides a comprehensive background. Chapter 4 analyzes U.S. jury verdict data on foodborne illness lawsuits for 1988-97.

Chapter 2

Characteristics of Microbial Foodborne Illness Relevant to Litigation

The Pathology of Foodborne Illness

More than 40 different foodborne microbial pathogens are known to cause human illness, including bacteria, parasites, viruses, fungi, and their toxins (CAST, 1994, pp. 11-15). The ecology of pathogens varies. Some pathogens, such as *Listeria monocytogenes*, are pervasive in the natural environment and may contaminate food during production or distribution. Others have found new ecological niches, such as *Salmonella* serotype Enteritidis in eggs.

Several pathogens were recognized only recently as a cause of foodborne illness (Tauxe, 1997). Some foodborne pathogens have not yet been scientifically identified. The CDC has estimated that these elusive, unknown pathogens account for 81 percent of the foodborne illnesses in the United States (Mead et al., 1999). These unknown pathogens probably account to some extent for epidemiologists' inability to identify the pathogens that caused over two-thirds of the 2,800 mass outbreaks of foodborne illness reported to the CDC during 1993-97 (Olsen et al., 2000).¹

The illnesses caused by foodborne pathogens vary greatly in severity, duration, and clinical manifestations. Most foodborne illnesses are not severe or prolonged and are limited to brief episodes of diarrhea, nausea, or other acute gastrointestinal symptoms. A small proportion of foodborne illnesses are severe or fatal, however. The CDC has estimated that 0.43 percent of U.S. foodborne illnesses require hospitalization, while 0.01 percent result in death (Mead et al., 1999). The most severe acute illnesses associated with foodborne pathogens include complications such as septicemia (infection of the bloodstream), localized infections of other organs, and spontaneous abortion in pregnant women. About 2-3 percent of foodborne ill-

nesses result in secondary complications that may become chronic health problems (Lindsay, 1997). The best-known complications associated with foodborne pathogens include reactive arthritis, hemolytic uremic syndrome (characterized by kidney failure), and Guillain-Barré syndrome (characterized by neuromuscular paralysis). Table 1 provides estimates of the annual foodborne illnesses, hospitalizations, and deaths for some of the most common or deadly foodborne pathogens.

Although most of the estimated 76 million annual foodborne illnesses in the United States are relatively mild and self-limiting, at least 325,000 of these illnesses are serious enough to result in hospitalization or death (Mead et al., 1999). Foodborne illnesses account for about 1 of every 100 U.S. hospitalizations and 1 of every 500 U.S. deaths.² The annual number of deaths due to food products contaminated by microbial pathogens is much smaller than the number of deaths associated with certain other products, notably tobacco, medical drugs, and alcoholic beverages. However, contaminated foods are responsible for many more accidental fatalities than some products commonly perceived as dangerous, including firearms, industrial machinery, and explosives.

Causes of Foodborne Illness

Epidemiological investigations of foodborne illnesses provide some information about the specific pathogens and foods that caused illness. Animal products such as meat, poultry, seafood, dairy products, and eggs are the foods most likely to cause outbreaks of human illness in the United States (CAST, 1994, p. 32). In recent years, the variety of foods associated with foodborne illness has increased (Tauxe, 1997). Some examples include salami, lettuce, bean sprouts, and raspberries.

Epidemiological investigations of foodborne illnesses also identify the kinds of errors in food production,

¹ CDC data on foodborne disease outbreaks define an outbreak as an incident in which two or more persons experienced a similar illness after ingestion of a common food, and epidemiologic analysis implicated a food as the source of the illness. There are two exceptions, botulism and chemical poisoning, for which one case constitutes an outbreak.

² The United States had 31.1 million community hospital admissions in 1996 (U.S. Census Bureau, 1999) and 2.3 million deaths in 1998 (Murphy, 2000).

distribution, or preparation that allow microbial pathogens to contaminate food.³ Some food-handling errors introduce pathogens into uncontaminated food. Other errors permit the pathogenic organisms already present in raw food to survive or multiply to dangerous levels in prepared food. Potential errors include:

- the use of contaminated raw food,
- cross-contamination of prepared food by contaminated raw food,
- poor personal hygiene by infected food handlers,
- inadequate cleaning of equipment,
- inadequate cooking or reheating,
- improper holding temperatures,
- cooling food too slowly after heating,
- eating food too long after preparation,
- insufficient fermentation, acidification, salting, or sweetening during processing (Bryan et al., 1997).

The most common cause of recent mass outbreaks of foodborne illness reported to the CDC was improper holding temperatures, but many outbreaks involved more than one error (Olsen et al., 2000).

Both food firms and consumers make food-handling errors that result in foodborne illness.⁴ Many illnesses are attributable to sequential errors by firms and consumers. Sequential errors occur when consumers improperly handle foods that were initially contaminated by microbial pathogens during commercial production or distribution. For example, a meatpacking plant may fail to prevent ground beef from being contaminated by *Salmonella* bacteria, and consumers may subsequently undercook hamburgers made from the ground beef, causing those who eat the hamburgers to become sick.

The proportion of foodborne illnesses due to separate food-handling errors by firms and consumers is unknown due to the limitations of the data on food-

borne illness (Powell, 1999). Most information about the errors that caused illness is derived from epidemiological investigations of foodborne illness outbreaks by State and local public health agencies. However, investigated outbreaks account for only a small and nonrepresentative share of all foodborne illnesses for several reasons. Public health agencies are more likely to learn about outbreaks affecting many people than about sporadic cases of illness affecting only one person, although sporadic cases are much more frequent than outbreak cases (Bean et al., 1990). Public health agencies are also more likely to learn about certain kinds of outbreaks than others, notably large outbreaks and outbreaks involving restaurants or severe illness (Bean et al., 1996). Finally, public health agencies have limited resources and do not thoroughly investigate or report every known outbreak to the CDC (Berkelman et al., 1994; Bean et al., 1996).

The most recent CDC summary of foodborne illness outbreaks indicates that public health agencies reported an annual average of 550 outbreaks resulting in 17,200 foodborne illnesses during 1993-97 (Olsen et al., 2000). Reported outbreaks consequently accounted for only about one of every 4,000 foodborne illnesses in the United States. About two-fifths of the outbreak reports sent to CDC did not identify the food-handling errors that caused illness (Olsen et al., 2000).

Epidemiological case-control studies of sporadic cases of foodborne illness also provide information about food-handling errors that cause illness. For example, a case-control study revealed that sporadic *E. coli* O157:H7 infections are associated with eating undercooked hamburgers (Slutsker et al., 1998). However, case-control studies have important limitations, notably their reliance on consumers' self-reports about food handling.

Despite the lack of information about the specific errors that caused most foodborne illnesses, some experts have concluded that most illnesses are attributable to food-handling errors by consumers (Scott and Sockett, 1998). Many consumers engage in unsafe food-handling practices, and some consumers prefer to eat "risky" foods. Examples include placing cooked hamburgers back on a plate that contains raw meat juices, and eating Caesar salad made with raw eggs. To conclude that most foodborne illnesses are due to consumers alone, however, ignores ample evidence that firms also make food-handling errors resulting in foodborne illness.

³ For simplicity, we use the term "food-handling errors" to include errors in food production, distribution, or preparation.

⁴ The discussion of firms in this report covers noncommercial organizations such as schools and churches as well as commercial firms, because noncommercial organizations may also handle food and be held liable for injuries due to foodborne pathogens.

Food-Handling Errors by Firms

The most recent CDC summary of reported foodborne disease outbreaks covering the 1993-97 period (Olsen et al., 2000) provides a sample of food-handling errors, most of which were never reported in the mass media. The sample includes information about the food product, the place where the food was eaten, and the food-handling errors responsible for causing illness. The 2,751 outbreaks included in the sample involved a wide variety of places and food products, indicating that food-handling errors were not restricted to a few error-prone firms or “risky” foods.

The CDC summaries of reported foodborne disease outbreaks reveal that most reported outbreaks were caused by food-handling errors by firms. During 1993-97, nearly 78 percent of the outbreaks with information about the place where contaminated food was eaten occurred in a commercial or institutional establishment, while only 22 percent occurred in a private residence (Olsen et al., 2000). The proportion of out-

breaks attributed to food prepared by firms has increased over time, rising from 63 percent in 1973-75 to 78 percent in 1993-97, although the reasons for the increase are unknown (Bean and Griffin, 1990; Olsen et al., 2000). Although food-handling errors by firms were involved in most reported outbreaks, little information is available about the role of firms in causing either unreported outbreaks or sporadic cases of foodborne illness.

Food-Handling Errors by Consumers

The high frequency of risky food-handling practices and food preferences among consumers suggests that many illnesses are due at least in part to consumer behavior. In addition to the risky food-handling practices already mentioned, other common risky practices include undercooking raw meat and poultry, and preparing salad and raw meats with the same utensils and cutting boards. The 1998 FDA Food Safety Survey of U.S. adults found that 4 percent ate raw

Table 1—Estimated annual foodborne illnesses, hospitalizations, and deaths due to selected pathogens, United States, 1999

Disease or agent	Illnesses	Hospitalizations	Deaths	Comment
----- Number -----				
Bacterial				
<i>Campylobacter spp.</i>	1,963,141	10,539	99	A small percentage of people develop Guillain-Barré Syndrome.
<i>Clostridium perfringens</i>	248,520	41	7	Usually causes mild gastrointestinal distress lasting only a day.
<i>Escherichia coli</i> O157:H7	62,458	1,843	52	Usually a mild gastrointestinal illness, but severe complications such as bloody diarrhea and kidney failure may develop (e.g., hemorrhagic colitis and hemolytic uremic syndrome (HUS)).
<i>Listeria monocytogenes</i>	2,493	2,298	499	Women infected with <i>Listeria</i> during pregnancy may transmit the infection to the fetus, possibly leading to stillbirths or babies born with mental retardation.
<i>Salmonella</i> , nontyphoidal	1,341,873	15,608	553	Relatively mild and common.
<i>Staphylococcus</i> foodborne illness	185,060	1,753	2	Characterized by severe nausea, vomiting, cramps, and diarrhea.
<i>Vibrio cholerae</i> , toxigenic	49	17	0	Causes epidemic cholera.
<i>Vibrio vulnificus</i>	47	43	18	Fatality rate is about 50 percent in people with chronic liver disease.
Parasitic				
<i>Toxoplasma gondii</i>	112,500	2,500	375	Infection may be transmitted to fetuses, possibly leading to stillbirths or babies born with birth defects ranging from hearing or visual impairments to mental retardation.

Source: Data from Mead et al., 1999.

steak tartare, 37 percent ate raw eggs or products with raw eggs, and 12 percent ate raw oysters (Fein and Riggins, 1998).

Consumers should follow proper food safety practices because raw foods might be contaminated by microbial pathogens. Proper handling, cooking, and storage procedures will eliminate most pathogens.

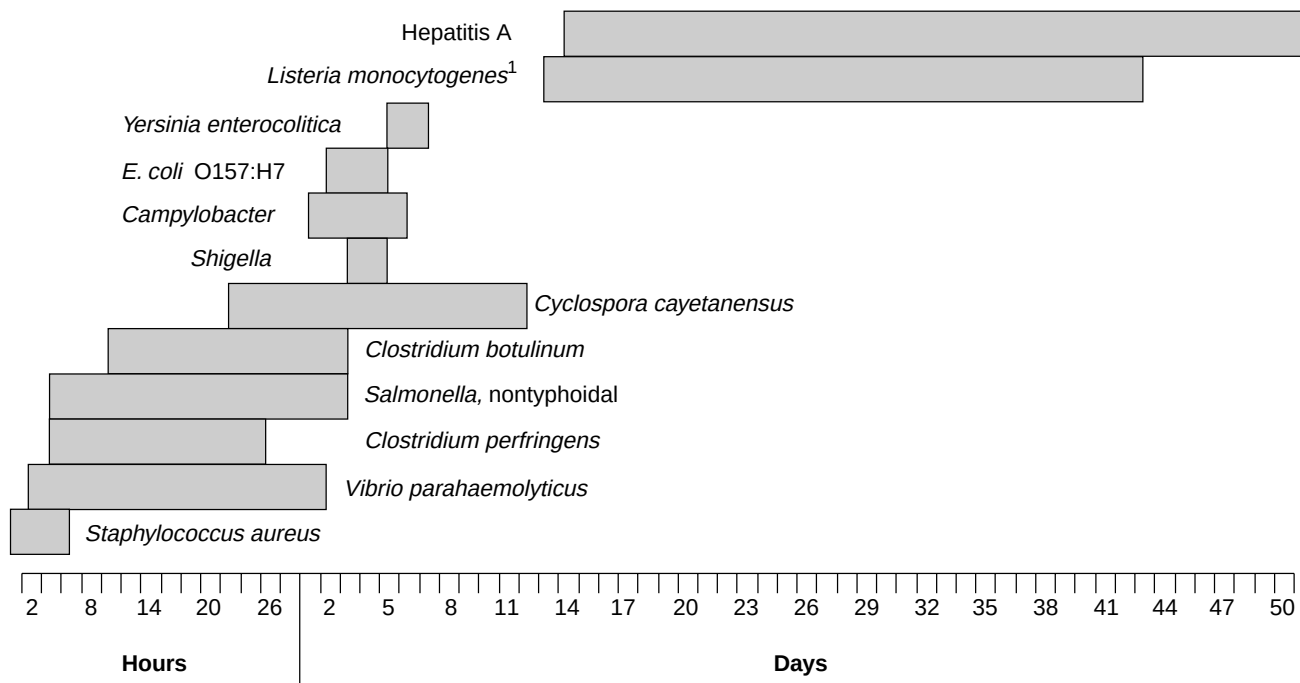
Epidemiological and Legal Perspectives on the Causes of Foodborne Illness

The epidemiological perspective on foodborne illness is separate from the legal perspective discussed more fully in the next chapter. From an epidemiological perspective, the example of *Salmonella*-contaminated ground beef mentioned earlier was due to errors by both the meatpacking plant and consumers who prepared hamburgers. In essence, the epidemiological perspective focuses on exactly how a food product became contaminated by a pathogen and caused human illness. In contrast, the legal perspective on foodborne illness focuses on liability for the damages

due to illness, which depends on other factors in addition to responsibility for the food-handling errors that caused illness. For example, although consumers and food firms may share responsibility for causing foodborne illness under the law, lawyers for food firms generally avoid blaming consumers for making food-handling errors because jurors also make the same errors at home and would likely be sympathetic to consumers accused of such errors (Clark, 2000).⁵ The law also imposes different standards of conduct on food firms than on consumers because food firms are expected to know about the risks of foodborne pathogens and to take effective measures to prevent pathogen contamination (Clark, 2000).

⁵ Any firm that raises the issue of consumer handling errors must also deal with the issue of why the firm did not warn the consumer about potential risks due to pathogen contamination of its food products. The legal concept of “failure to warn” is discussed further in the appendix.

Figure 1
Usual incubation period ranges for select foodborne diseases



¹Invasive form, incubation period for diarrheal disease unknown.

Source: Data on the “usual” incubation period obtained from the Centers for Disease Control and Prevention, “Surveillance for Foodborne-Disease Outbreaks--United States, 1988-1992.” MMWR 45,SS-5 (Oct. 25, 1996): 58-66.

Characteristics of Foodborne Illnesses

Several characteristics of foodborne illnesses may affect efforts to determine liability for the injuries due to these illnesses. These characteristics include the incubation period, mass outbreaks of illness, a person's susceptibility to foodborne infections, and medical practices.

Incubation Period. Many foodborne pathogens do not cause symptoms of acute illness until several days after the contaminated food is eaten, although the average incubation period before the onset of acute symptoms varies considerably by pathogen (fig. 1). Symptoms due to the toxins produced by *Staphylococcus aureus* appear within 2-4 hours, while symptoms due to invasive *Listeria monocytogenes* infections may not develop for 2-6 weeks (CDC, 1996). Chronic complications may take even longer to develop, often several weeks or months after the consumption of contaminated food.

The long incubation period for some pathogens makes it difficult to link specific contaminated food products with adverse health outcomes, particularly the often nonspecific symptoms of foodborne illness. This time lag also makes it difficult to trace problems back to specific producers, thus providing the food industry with some protection from litigation. Several meals may have been eaten before people noticed foodborne illness symptoms. In general, the difficulty of tracing a foodborne illness back to a specific food source increases as the incubation period lengthens. The longer the incubation period, the greater the number of other potential sources of foodborne illness and the lower the likelihood of having any samples of suspect food available for microbiological testing.

Mass Outbreaks of Illness. Public health authorities are more likely to investigate mass outbreaks than individual cases of foodborne illness. Therefore, outbreak cases tend to have more documentation, which can help determine liability for injuries due to food products contaminated by microbial pathogens. Additionally, plaintiffs in outbreaks have the added option of pursuing litigation via class action suits or mass litigation (see appendix).

Variations in Susceptibility to Foodborne Infections. People vary in their susceptibility to foodborne infections due to host factors, such as age, stress, health of their immune system, and personal hygiene, as well as

diet-related factors, such as consumption of antacids and nutritional deficiencies (CAST, 1994, p. 27). Foodborne illnesses tend to have the most severe consequences in children, the elderly, and the immunocompromised (i.e., AIDS and cancer patients).

Medical Practice Patterns. Most foodborne illness patients never receive a definitive medical diagnosis, either because they did not seek medical care or because their physician did not test for the pathogen that caused the illness. For example, the Foodborne Diseases Active Surveillance Network (FoodNet) found that only 12-15 percent of people who experienced acute diarrhea (the most common symptom of foodborne illness) saw a doctor about their illness, and only about a fifth of diarrhea patients provided a stool specimen for the tests needed to determine the exact cause of their illness (Frenzen et al., 1999). A medical diagnosis can strengthen suspected linkages between a particular illness and food product, information important in pursuing foodborne illness litigation.

Economic Costs of Foodborne Illness

Because most foodborne illnesses are mild and do not require medical care, the average economic cost for ill consumers and their families is likely to be small. However, more severe illnesses can impose high monetary costs, including medical costs and income or productivity losses, as well as nonmonetary costs such as pain and suffering.

Some economic costs of illness are shifted to parties other than the person who became ill. Types of cost shifting include: (1) insured medical expenses for those with health insurance are shifted to private or public health insurers; (2) uninsured medical expenses for those unable to pay their medical bills are absorbed by health care providers (or by taxpayers) when medical expenses are deducted as a business loss; (3) time lost from work by employees with sick leave benefits, and reduced productivity by employees who report to work while ill, become costs for employers; and (4) medical expenses for foodborne illness covered under government health plans (e.g., Medicare) are borne by taxpayers. This cost-shifting reduces out-of-pocket costs for ill people and their families. The widespread prevalence of these cost-shifting mechanisms may reduce the economic incentives for ill individuals to seek compensation from those responsible for causing their illness.

Chapter 3

The Intersection Between Liability Law and Economics and Its Relevance to Foodborne Illness Litigation

Overview of the Incentive System To Provide Food Safety

U.S. firms that make or distribute food products have a variety of incentives to reduce microbial pathogen contamination to safe levels. A system of market, regulatory, and legal components provides these incentives to firms to produce safe food products (Garber, 1998a 1998b, extended to food safety). These incentives generally take the form of “negative incentives” or adverse consequences for firms responsible for selling pathogen-contaminated food. The basic components of this incentive system are:

1. Market forces: firms risk losing business reputation, market share, and sales revenue if consumers become concerned about safety problems with a firm’s products.

2. Food safety laws and regulations: firms that violate Federal, State, or local food safety laws or regulations may be subject to various penalties imposed by courts or government agencies, including fines, product recalls, and temporary or permanent plant closures.

3. Product liability law: firms found responsible under product liability law for contaminated food products that made people ill may have to pay financial compensation to the plaintiffs as well as punitive damages. Firms also pay court costs and legal fees, regardless of most outcomes.

Product liability law deals with products that are defective either because they pose hazards or because they are of inferior condition or quality (Keeton et al., 1984, p. 677). In essence, product liability operates within this system of market, regulatory, and legal components and the combined incentives from this system encourage firms to provide safer products. Here we are concerned only with products that pose microbial food safety hazards.

The complexity of our food safety system and the interconnectedness of the three components is shown by the 1996 outbreak of foodborne illness due to *E. coli* O157:H7 contamination of unpasteurized apple juice manufactured by Odwalla, Inc. This outbreak raised consumer concerns nationwide about the safety

of fresh juice, and prompted many juice manufacturers to voluntarily begin pasteurizing juice products not previously pasteurized. The increasing number of foodborne illness outbreaks due to *E. coli* O157:H7 contamination of unpasteurized juice products also led the U.S. Food and Drug Administration (FDA) to propose new regulations for juice products (Buzby and Crutchfield, 1999). These changes in market forces and government regulations were in addition to the adverse consequences for Odwalla, which included a voluntary product recall costing \$12.5 million, a 17-percent drop in revenue during the first 6 months after the outbreak, a record \$1.5 million Federal fine for interstate shipment of an adulterated food product, and 21 personal injury lawsuits (Buzby and Crutchfield, 1999; Roach, 1999; Munarriz, 1997).

Intersection Between Law and Economics

Of the three components of the food safety incentive system, this report focuses on product liability and, specifically, on how foodborne illness is treated under product liability law. Product liability law specifies the exact circumstances under which firms are held liable for injuries or deaths due to contaminated food products, shifting some economic costs of foodborne illness from consumers to the firms responsible for causing illness. (See appendix for more information on the applicability of product liability law to foodborne illness.) For an overview about some of the literature on the intersection between law and economics and on how lawyers and economists view liability law from different perspectives, see box, “Intersection of Law and Economics” (p. 10). This chapter outlines the role of insurance for foodborne illness because insurance alters how the legal system provides incentives to firms to produce safer food. The chapter concludes by arguing that the combination of high transaction and information costs may lead to less than desirable levels of food safety in the United States.

In a world of perfect information and competition, markets would penalize firms that produce unsafe products. Firms would receive negative signals about their errors and the market would correct itself.

Although the U.S. food market cannot be characterized as having perfect competition, both economists and legal analysts agree that liability law provides some economic incentives to avoid actions that may violate laws. However, the extent to which liability law is economically efficient is unclear.

Economists tend to analyze liability law in terms of a search for efficiency in risk-bearing and incentives (see Cooter, 1991).⁶ Economic theory suggests that foodborne illness litigation provides signals to firms to invest more in food safety, ultimately resulting in a lower incidence of foodborne illness and an increase in general social welfare.⁷ One underlying economic premise of foodborne illness litigation is that a firm receives the appropriate incentives for efficient behavior (e.g., to produce safer products) if it compensates all victims who are made ill by microbial contamination of the firm's food and if, for each case, the level of monetary compensation equals total damages.⁸ In reality, perfect compensation does not occur for all foodborne illness cases and outbreaks because relatively few firms are held responsible for monetary damages caused by contamination of their food products.

Potential liability is one part of firms' anticipated costs of operation, and firms will take the optimal amount of food safety precautions consistent with minimizing their total costs of production (Johnson et al., 1989). Doing everything physically possible to make food safe is not economically efficient. Instead, a firm will incur increased costs of food safety precautions up to the point where the marginal costs of these actions equal the marginal expected benefits of reducing their risks of being sued for a foodborne illness incident, paying legal compensation, and paying any Federal or

State penalties for violation of regulations. The calculation of these expected costs involves the probability of paying damages (i.e., compensation) in a lawsuit, the size of the potential litigation costs, and any negative impacts to the firm's reputation and sales. Even if firms are not directly affected by legal action, many buy product liability insurance coverage to limit direct losses due to lawsuits, transforming the expected risk of lawsuits into a routine business expense.

The legal system could provide optimal deterrence if firms could correctly anticipate the compensation that the legal system would impose (Viscusi, 1989). However, three obstacles limit a firm's understanding of the true compensation they may have to pay following a risky activity (Viscusi, 1989, p. 82). First, compensation may not reflect the true damages that a plaintiff suffered. Second, compensation awards do not reliably indicate damages to actual victims. Victims who did not receive compensation, particularly those who never filed a claim, are overlooked. Third, some firms do not contemplate paying compensation awards, such as firms with short time horizons like speculative ventures. Other firms, when faced with the possibility of particularly large claims, may limit liability by reorganizing under Federal bankruptcy law (Viscusi, 1989).

Most food firms are insured, and insurers pay the losses and costs of any litigation and damages, so immediate legal incentives for firms to produce safer food are limited to the value of lost business reputation. However, other legal incentives are likely to include future increases in insurance costs if insurers raise rates or drop coverage for firms that cause insurance losses.

Insurance and Foodborne Illness

Consumers ill with foodborne illness have reduced incentives to pursue legal claims if health insurance or employee benefits programs cover some of the costs of their illness. Levit and Freeland (1988) found that, after private and public insurance (e.g., social insurance), patients directly paid for only 56 percent of all national health-care expenditures. They also found that, in general, the more expensive the service, the less (proportionally) did individuals pay (e.g., individuals directly paid only 10 percent of hospital-care expenses). Because consumers tend to be risk averse, they want insurance coverage for when they become ill.

⁶ Economic efficiency occurs when a firm's money and other resources are allocated in such a way that additional increases in an activity cannot be achieved without giving up a portion of some other activity.

⁷ Liability law deters or discourages food firms from operating in ways that might result in foodborne illness: if firms perceive a risk of incurring liability-related economic costs, they will allocate resources to reduce the probability that their products will cause foodborne illness.

⁸ Perfect compensation is a monetary compensation that restores a victim to the same level of well-being that would have been enjoyed had the externality (e.g., illness or accident) not occurred (Cooter, 1991). Of course, we cannot interpret this literally, as few, if any, plaintiffs would willingly accept some externalities (Cooter, 1991), such as the death of a child, paralysis, or chronic complications, in exchange for money.

Firms also tend to be risk averse, and consequently they want insurance coverage to manage risks (Shapiro, 1991). As part of a firm's risk-management strategy, firms purchase insurance to limit their exposure to financial, legal, and other risks by sharing these risks with insurance companies. Almost all defendant firms have "third-party insurance," or "liability insurance" for legal risks, and Clark (2000)⁹ neatly summarizes how insurance works for firms:

Large corporations typically have layers of "excess" insurance running into the tens or hundreds of millions of dollars. These excess insurers, in turn, insure themselves against the risk that they have to pay all of their money out by going to the 'reinsurance' market where they acquire the ability to recoup the vast majority of their insured losses from reinsurers. When a company is sued, its insurance company (a) provides a legal defense at the insurer's cost and (b) pays any resultant settlement or judgment. Insurers, not defendants, control litigation and determine what will be

paid and when it will be paid [in the case of settlements].

Comprehensive information about product liability insurance coverage in the food industry is not readily accessible because the insurance industry is highly competitive and data about premiums and paid claims are valuable market information. One example of the insurance available to food firms is the "products contamination coverage" sold by the insurance subsidiary of the National Food Processors Association. This coverage includes assistance to deal with regulatory investigations and media inquiries, as well as product testing and compensation for the costs of product recalls, lost profits, and damage to brand names. Many food firms might obtain less comprehensive coverage. Further research is needed to establish how product liability coverage varies among different kinds of food firms. Some observers believe that nearly all food firms have at least some coverage against foodborne illness due to a firm's products (Clark, 2000).

In short, although both health-care insurance and liability insurance benefit foodborne illness victims with compensation, they both distort incentives for firms to produce safer food. Health insurers seldom try to recover the costs of medical care for foodborne illness patients from the firms responsible for contaminated

⁹ Bruce T. Clark is an attorney at Marler-Clark, a law firm in Seattle that has handled many prominent foodborne illness cases.

Intersection of Law and Economics

Adam Smith and Jeremy Bentham were among the first scholars to analyze the intersection of law and economics, and in the 1920's and 1930's, members of the legal-realist movement argued that the only function of tort law was to provide social insurance, since they believed tort law had no effect on the accident level (Landes and Posner, 1987). Although another wave of scholarship in law and economics occurred in the 1960's with seminal articles by Ronald Coase (common law as a mechanism for internalizing social costs) and by Guido Calabresi (model of efficient accident law), sustained scholarship in this area lagged for another decade (Landes and Posner, 1987). Since that time, Richard Posner, Steven Shavell, Kip Viscusi, and others have added to the literature (e.g., Posner, 1997; Shavell, 1987; Viscusi, 1996). It is now widely accepted that law provides economic incentives to make safer products, though more research is needed on the extent and relative strength of these incentives, particularly compared with incentives from government regulation and market forces.

A review of the legal and economic literature in the past decade suggests that lawyers and economists tend to emphasize different aspects of liability law. The legal literature commonly emphasizes that the objectives of liability law are to deter injurers and to compensate victims (e.g., Rose-Ackerman, 1991). The economic literature generally adds the concept of efficiency and analyzes law as a mechanism to achieve greater efficiency in risk management and incentives. This distinction is relevant here because this report not only investigates how the legal system deters production of unsafe food and compensates consumers for their foodborne illnesses, but also comments on efficiency and effectiveness issues.

food products because it is not cost effective. Consequently, health insurance limits the extent to which food firms receive signals to produce safer food. Meanwhile, liability insurance distorts incentives to produce safer foods, particularly if insurers are involved in settlements that are kept confidential.

Transaction and Information Costs

Viscusi (1989) has argued that tort liability causes an underproduction of health and safety in the United States because of high transaction and information costs. The same claim can be made for foodborne illness. High transaction costs and information costs dissuade food-poisoning victims from filing lawsuits, hinder a plaintiff's ability to prove causality, limit feedback to firms to produce safer food, and pose costs to plaintiffs and defendant firms. The result is a level of food safety that is less than the socially optimal level provided by a perfectly competitive market.

Transaction Costs

Both plaintiffs and defendants may incur high transaction costs (RAND, 1998a), that is, the amount of money spent for legal fees. Trials tend to cost anywhere from \$50,000 to tens of millions (Kumamoto and Henley, 1996). One study found that, of total expenditures on tort cases during 1983-88, 22 percent were plaintiffs' legal costs, 28 percent were defendants' legal costs, and only 50 percent represented net compensation received by plaintiffs (RAND, 1998a). Large transaction costs suggest that liability is an expensive way to compensate victims (Shapiro, 1991, p. 4).

For plaintiffs, transaction costs are primarily the costs of a product liability lawsuit (i.e., dollars spent for lawyer fees, court filing fees, expert witness fees). This definition can be expanded to include other costs, such as emotional stress, and money spent (e.g., travel costs) and time lost from work and other activities by the plaintiffs and their families while preparing for and appearing in court.

Plaintiffs routinely pay attorneys at least a third of any court award or settlement as a contingent fee (Cooter, 1991). If plaintiffs pursue litigation under a contingent fee basis, then transaction costs are limited to time lost from work and other disruptions of daily activities, because their attorney assumes the responsibility for the financial costs associated with filing and pursuing

the lawsuit (Clark, 2000).¹⁰ Therefore, high information costs and the uncertain outcome of a lawsuit may provide greater disincentives for these plaintiffs to pursue litigation than do transaction costs. Additionally, most foodborne illnesses are relatively mild and short-lived and do not incur medical and other costs high enough to make litigation worthwhile for a plaintiff to pursue litigation. Similarly, for particular foodborne-illness cases, the potentially modest rewards may be too low to attract an attorney to represent a plaintiff's claim on a contingent fee basis.

However, plaintiff attorneys are not obligated to take a case on a contingent fee basis but may rather prefer a fixed fee or an hourly rate. In these situations, a plaintiff must decide whether he or she can afford attorneys' fees and costs to pursue a case.

For defendant firms, a lawsuit's transaction costs include lawyer fees, witness fees, time lost from usual business activities (due to discovery requests for firm records, rehearsal of employee witnesses, courtroom appearances, etc.), potential loss of business reputation associated with adverse publicity from a public trial and consequent decline in sales, and increases in product liability insurance premiums. The appendix discusses incentives for firms to settle rather than go to trial.

Information Costs

High information costs may also discourage or prevent potential plaintiffs from filing foodborne illness claims. In particular, as discussed in the previous chapter, plaintiffs may lack information to link an illness to their consumption of a specific food that was contaminated with a specific pathogen because of a specific defendant's act or failure to act. And even if a plaintiff could afford to spend a great deal of money for supporting information for a case, the information necessary for successful litigation may be unavailable.

The most crucial issue in litigation for foodborne illness is causation, and epidemiologists and other medical professionals are generally needed to make such links. Plaintiffs typically try to obtain and use such expert medical or epidemiological testimony to support their claim. For example, where possible, plaintiffs obtain information from local and State public health authorities as well as from the CDC, particularly for

¹⁰ Of course, cost sharing depends on a fee agreement.

outbreaks in which health authorities determined a food-pathogen linkage. Public health authorities who investigate a case or an outbreak may be called to give a deposition or to testify as to their findings in court. However, because of conflicts of interest, they provide this information as part of their job rather than as an expert witness for the plaintiff (Rosenbaum, 2000). Public health officials from outside an area and the arena of the investigation may be used as experts (Rosenbaum, 2000).

One common starting point in investigating causation is identifying the foodborne illness either by medical testing procedures or by simpler, descriptive techniques, such as determining if the ill consumer's symptoms are consistent with typical acute and chronic symptoms for the particular foodborne illnesses being considered. Information about what the consumer ate prior to the illness is needed to identify a likely food source. If a pathogen is identified, the time frame under investigation can be narrowed down to match the typical incubation period of an implicated foodborne illness. Multiple food sources that could have caused an illness complicate the determination of causation. If an illness and a suspect food (e.g., raw eggs)

are identified, the next step in the investigation is generally to identify the likely party that contaminated the food. Knowledge of the actual food-handling steps used by the implicated firm may be used. In outbreak situations, circumstantial evidence may also be used, that is, information about the circumstances that help establish connections between a plaintiff's illness and the implicated food and firm. For example, evidence that other people got sick after eating the same food can lay the foundation for proving that the food was unwholesome (Draper, 1994).

Information about medical expenses and costs of lost productivity helps support a plaintiff's claim. Additionally, plaintiffs may also need "information about the costs of safety measures that the risk-reducing party might have taken" (Viscusi, 1989, p. 72).

Monetary costs to a potential plaintiff of obtaining information necessary to prove causation may be high, and such information may not be available at all. Similarly, the time necessary to obtain this information may also be high or infeasible. In general, costs are lower if an illness is part of an outbreak investigated by public health authorities or widely reported by the media.

Chapter 4

Analysis of Jury Verdict Data for Foodborne Illness

One purpose of this report is to perform a preliminary exploration of product liability law for foodborne illness and the incentives it provides firms to produce safer food. To this end, the analysis described here used U.S. jury verdict data on foodborne illness lawsuits for 1988-97. We analyzed the frequency and size of awards by illness severity, pathogen, and food sub-categories. We used multivariate analyses to examine the simultaneous effects of the various factors that might affect whether or not plaintiffs receive foodborne illness jury verdicts and the size of the award.

U.S. Foodborne Illness Court Data

The universe of U.S. foodborne illness cases is unknown because there is no national system documenting all product liability cases, particularly those dropped or settled out of court. Therefore, we focused exclusively on foodborne illness lawsuits that were tried and resulted in jury verdicts. We identified foodborne illness jury verdicts by systematically searching two major jury verdict databases, the West Group's Westlaw Jury Verdicts and Settlement Summaries (West Group, Inc., Eagan, Minnesota) and the Lexis-Nexis Verdicts Library (Reed Elsevier PLC, London, England). Although these databases include both trials and settlements, we discarded the settlement data as they were not representative.¹¹ These databases included descriptive summaries of civil jury verdicts, gathered by jury verdict reporting firms that collect and sell information about legal cases for use by practicing attorneys. Information provided about each verdict was limited, and omitted whether verdicts had been overturned or reduced through the post-trial appeal process.

Most jury verdict reporting firms cover a single State or metropolitan area, although none collect every verdict in their covered area. In some areas of the country with competing firms, the firms believed that every foodborne illness jury verdict in the area was reported by at least one firm, assuring complete reporting.

¹¹ For example, settlement data are prone to selection biases such as the differences between confidential settlements and settlements that are disclosed to the public.

However, at least some foodborne illness jury verdicts went unreported in other areas of country. Jury verdict reporting firms also claim that the product liability jury trials included in their databases were selected without any bias in favor of plaintiff verdicts or large awards. Thus, the foodborne illness jury verdicts identified by the firms in areas without complete reporting appeared to be a representative sample of all foodborne illness jury trials in these areas.

We searched the Westlaw and Lexis-Nexis (WLN) databases for every jury verdict involving personal injuries due to pathogen-contaminated food between 1988 and 1997. Relevant jury verdicts in the WLN databases were identified by searching for the general classification term "food poisoning" or the names of common foodborne pathogens or illnesses (botulism, *Campylobacter*, campylobacteriosis, ciguatera, ciguatera toxin, *Clostridium*, *Cryptosporidium*, *Cyclospora*, *E. coli*, hepatitis, *Listeria*, listeriosis, *Salmonella*, *Shigella*, *Staphylococcus*, *Toxoplasma*, toxoplasmosis, *Trichinella*, trichinosis, *Vibrio*, and *Yersinia*).

Cases were included only if they met our definition of a foodborne illness case: the illness (1) produced symptoms consistent with foodborne illness (e.g., gastrointestinal distress) in the medical literature, (2) was linked to food, and (3) was claimed to have resulted from pathogens or foreign objects that are "organic" or could have been living in the food.

The data include lawsuits whose trial dates or dates of resolution were between 1988 and 1997. The analysis was limited to the 1988-97 period because most of the jury verdict reporting firms did not begin providing their case summaries to Westlaw or to Lexis-Nexis until the late 1980's.

The results from the WLN databases search were supplemented with information from a few published case histories. We identified 178 "foodborne illness" jury trials in 32 States that reached legal resolution during the 10-year period, 1988-1997. None of the 178 jury trials were class action suits, although some involved more than one injured plaintiff, such as a family with the same foodborne illness.

After identifying the foodborne illness jury verdicts, we then searched the entire Lexis-Nexis Litigation

Library database to determine whether each foodborne illness jury verdict had been appealed to a higher court. Two lawsuits had been unsuccessfully appealed by defendants. Several others had been remanded for retrial, but we were unable to determine the outcome so they were dropped from the analysis.

We compared the verdicts from the areas with full reporting and sample reporting to determine whether there were any systematic differences that might reflect sampling bias in the areas with sample reporting. The comparison was performed by conducting a likelihood ratio test of multivariate models predicting the outcome of trials in each area. The test revealed no significant difference between the population of verdicts drawn from each area ($\chi^2=13.9$, d.f.=10, $P>.05$), suggesting that the sampling was unbiased. Based on this evidence, the 178 cases identified by searching the WLN databases appear to provide representative information about foodborne illness lawsuits resulting in jury verdicts in areas with both full and partial jury verdict reporting during 1988-97.

A number of different characteristics of each foodborne illness lawsuit were coded in a computer database, including the date of the incident that caused the injury, the type of food and pathogen involved, the severity of the illness, the date of the trial verdict, the outcome of the trial, and the amount of any damage award. Descriptive information in the published WLN summaries varied. For example, all cases reported the outcome/verdict, but three cases did not report compensation amounts, and few reported claimed expenses.

Financial damage awards were updated to 1998 dollars using the Bureau of Labor Statistics' annual Consumer Price Index for all urban consumers to ensure comparability between lawsuits.¹² For many of the subsequent sections, we report three main statistics about awards:

Mean award: This is the average monetary compensation awarded to plaintiffs who received compensation. This statistic excludes cases won by defendants, cases where plaintiffs won but did not receive compensation, and cases for which we did not have information on awards.

Median award: This is the midpoint of monetary compensation awarded to plaintiffs who received compensation. This statistic excludes cases won by defen-

dants, cases where plaintiffs won but did not receive compensation, and cases for which we did not have information on awards.

Expected award: This is the mean plaintiff award multiplied by the percent of foodborne illness jury trials won by plaintiffs. The only cases excluded here are those for which we did not have information on awards. This is the most relevant statistic for the purpose of this report as it shows the expected monetary transaction as a result of a foodborne illness lawsuit between different parties in the chain of food production, distribution, and consumption.

Findings

Time to Legal Resolution

In general, the time to a legal resolution is the sum of several components:

- the time between the incident (e.g., illness or injury) and the filing of the complaint,
- the time between the filing of the complaint and the beginning of the trial,
- the time between the beginning of the trial and the announcement of the verdict,
- the time between the verdict and the filing of an appeal (if one is filed),
- the time it takes for the appeal to a final judgment (if an appeal is filed), and
- the time between a conclusive plaintiff victory and the receipt of any compensation.

Of the 178 court decisions for foodborne illness lawsuits in the WLN data, 110 observations provided information on the time between the alleged foodborne illness incident and the legal resolution. The average time elapsed between the date of the incident that resulted in illness and the date of the jury verdict was 3.1 years (median of 2.8 years). One case was not tried for nearly 10 years, although another case was tried in just 5 months. The WLN data do not permit a more descriptive breakdown of time components.

The average time required to bring a foodborne illness lawsuit to trial was comparable to the average time elapsed between the filing of a product liability lawsuit and the trial verdict (2.5 years) reported in a study of all product liability cases in five States during 1983-85 (GAO, 1989, p. 49). The slow pace of foodborne illness litigation may impose significant costs on con-

¹² Source: <<http://146.142.4.24/cgi-bin/srg>>. [Accessed Feb. 22, 1999].

sumer plaintiffs. Nevertheless, delay may be advantageous for consumers who developed long-term chronic complications of foodborne illness and who were well advised to wait to determine the full extent of their injuries before filing a lawsuit specifying monetary damages (Rosenbaum, 1998).

Frequency and Size of Awards

Most plaintiffs failed to convince juries that defendants were legally responsible for causing their illness. One-third of the verdicts (31.4 percent) resulted in a monetary award for the consumer. For the 55 cases where the plaintiffs prevailed, the mean award to plaintiffs was \$133,280 (table 2). However, the distribution of awards was highly skewed because some awards were much larger, including two awards over \$1 million. The median award of \$25,560 consequently provides a better indication of the typical jury award for damages resulting from foodborne illness. The total amount awarded to the 55 cases that prevailed in court was \$7.3 million, but the two largest awards accounted for over half (51 percent) of this sum.

An alternative measure of the amount awarded in foodborne illness lawsuits is the expected award. The expected award is the mean award multiplied by the percent of jury trials won by plaintiffs (i.e., 31.4 percent). The expected award was \$41,888, nearly two-thirds larger than the median plaintiff award. Consumers and firms involved in foodborne illness lawsuits could take this expected award into account when making decisions about whether to resolve a lawsuit prior to trial. Consumers could expect to

receive this amount if they went to trial, less their legal and court fees which typically total about one-third of the award. Conversely, firms could expect to pay this amount if they go to trial, in addition to their legal fees and any other costs associated with a public trial such as loss of business reputation.

Court Awards by Severity Category

The jury verdict summaries provided only minimal information on illness severity. Therefore, we subdivided the 178 court cases into three categories by severity: cases involving a premature death, cases involving hospitalization but not a premature death, and all other cases involving less severe illnesses. Six lawsuits (3 percent) involved a death, and another one-third of the lawsuits (60 percent) involved nonfatal injuries severe enough to require hospitalization. The average length of hospitalization was 9 days, although one plaintiff was hospitalized for 49 days.

Injury severity is a major factor affecting an expected award. Of the six lawsuits involving a premature death, juries awarded damages in four (66.7 percent). The expected award for a lawsuit that claimed a premature death as a result of a foodborne illness was \$183,053, far higher than the expected award (\$44,713) for lawsuits involving nonfatal foodborne illnesses requiring hospitalization, and the expected award (\$32,563) for all other illnesses (table 3). This pattern is consistent with the finding of the 1989 GAO report on general product liability cases in five States in which the size of the award varied by the type and degree of injury.

Table 2—Compensation for consumer plaintiffs in foodborne illness lawsuits decided by jury verdicts, 1988-97¹

Outcome	Sample size	Percent won by plaintiffs	Range of compensation	Mean award	Median award	Expected award ²	Total amount compensated
	Number	Percent	----- 1998 Dollars -----				
Plaintiff ³	55	100	2,256-2,368,858	133,280	25,560	133,280	7,330,412
Defendant ⁴	120	0	0	0	0	0	0
Total	175	31.4	0-2,368,858	133,280	25,560	41,888	7,330,412

¹ Data updated to 1998 dollars using Bureau of Labor Statistics Consumer Price Index for all urban consumers. Of the 178 court decisions, 175 had published information on awards.

² The expected award is the average award multiplied by the percent of foodborne illness jury trials won by plaintiffs.

³ Plaintiff verdict or award combined.

⁴ Defendant verdict or judgment combined. Occasionally, unsuccessful plaintiffs covered defendants' court costs but these were not enumerated here.

Table 3—Compensation in foodborne illness court cases by severity category, 1988-97¹

Illness severity	Court cases with award information	Percent won by plaintiff	Mean award	Median award	Expected award ²
	Number	Percent	----- 1998 dollars -----		
Premature death	6	66.7	274,580	185,828	183,053
Hospitalized and survived	60	31.7	141,199	61,814	44,713
Other cases	109	29.4	110,916	11,746	32,563
Total	175	31.4	133,280	25,560	41,888

¹ Only 175 of the 178 court decisions had award information so the award totals do not represent statistics for all court awards.

² The expected award is the mean plaintiff award multiplied by the percent of foodborne illness jury trials won by plaintiffs. The only cases excluded here are cases for which we did not have information on awards.

Court Awards by Implicated Pathogen

The ability of consumer plaintiffs to identify the specific pathogen and food item that made them ill is likely to have an important effect on the outcome of a trial because of the emphasis placed on establishing a causal link between a defective product and the alleged injury under product liability law. Less than half (48 percent) of the jury verdict reports implicated a specific foodborne pathogen, toxin, or illness (table 4). Some reports may have failed to record pathogen names, so the actual proportion of lawsuits that implicated a specific pathogen might be somewhat higher. Among the jury verdict reports that named a pathogen, *Salmonella* was the most frequently cited pathogen, followed by hepatitis (any type).¹³

Plaintiffs who alleged illness from a specific pathogen were more likely to receive compensation (41.7 percent) than plaintiffs who did not implicate a specific pathogen (22 percent), and the expected award was far higher when a specific illness or pathogen was alleged. These findings suggest the importance of establishing a causal link for a plaintiff to prevail in a foodborne illness trial and receive compensation (table 5).

¹³ Knowledge about the different pathogens varies greatly, meaning that there is uneven documentation, scientific literature, and legal precedent for the different pathogens in foodborne illness litigation.

Table 4—Foodborne pathogens, toxins, or illnesses involved in foodborne illness lawsuits decided by jury verdicts, 1988-97

Pathogen	Lawsuits	
	Number	Percent ¹
<i>Salmonella</i> (any serotype)	39	21.9
Hepatitis (any type)	10	5.6
<i>Staphylococcus</i>	6	3.4
<i>Vibrio vulnificus</i>	6	3.4
<i>Shigella</i> (any type)	5	2.8
<i>Campylobacter</i>	4	2.2
Mold	4	2.2
<i>E. coli</i> ²	3	1.7
Botulism (<i>Clostridium botulinum</i>)	2	1.1
Ciguatera	2	1.1
<i>Salmonella</i> and <i>Staphylococcus</i> (combined)	1	0.6
<i>Streptococcus</i>	1	0.6
<i>Trichinella spiralis</i>	1	0.6
<i>Vibrio parahaemolyticus</i>	1	0.6
Adverse reaction to protective immunization after exposure to foodborne hepatitis	1	0.6
Not specified	92	51.7
Total	178	100

¹ Percents may not add to 100 due to rounding.

² The case summaries for the three lawsuits involving *E. coli* did not mention the serotype, but all three cases appeared to involve *E. coli* O157:H7.

Court Awards by Implicated Food

Most jury verdict reports (92 percent) identified some kind of food as the cause of illness (table 6). However, one-fourth of the reports simply named meals such as “dinner” or food categories such as “fast food” that presumably included multiple food items, leaving the precise source of illness unclear. In contrast, two-thirds of the jury verdict reports (66 percent) identified a specific food item or food as the cause of illness. The most frequently mentioned foods were sandwiches, followed by seafood (excluding oysters) and chicken. Only three lawsuits mentioned packaged meals such as canned foods or frozen meals, suggesting that litigation involving packaged meals was either uncommon or likely to be resolved out of court.

Interestingly, cases whose jury verdict summaries alleged a specific food as the cause of the illness resulted in a lower percentage of favorable plaintiff verdicts (26.3 percent) than cases that did not name a specific food (e.g., “dinner” or “fast food”) (41.0 percent) (table 7). This finding is counterintuitive because of the importance of establishing a causal link.

Table 5—Compensation in foodborne illness court cases by pathogen category, 1988-97¹

Pathogen category	Court cases with award information	Decision for plaintiffs	Mean award	Median award	Expected award ²
	<i>Number</i>	<i>Percent</i>	----- 1998 dollars -----		
Alleged illness from a specific pathogen	84	41.7	197,599	55,061	82,333
Unspecified pathogen	91	22.0	20,722	11,960	4,554
Total	175	31.4	133,280	25,560	41,888

¹ Of the 178 court decisions, 175 had award information. Therefore, the award totals do not represent statistics for all court awards.

² The expected award is the mean plaintiff award multiplied by the percent won by plaintiffs. The only cases excluded here are cases for which we did not have information about awards.

This finding may reflect a lack of detail about the trials reported in the jury verdict summaries. Some trials may have alleged a specific food, but jury verdict reporters did not consider this information important to record. However, the expected award was higher for those alleging a specific food (\$48,593) than for those who did not (\$29,358).

Court Awards by Type of Defendant

Plaintiffs may sue multiple defendants for several reasons. For example, even in cases where there is a strong indication of wrongdoing by restaurants, such as documented improper cooking temperatures, plaintiffs may think that the illness was first caused further back in the food production chain by the pathogen contaminating the product or by sloppy slaughtering practices or poor sanitation in processing, and they wish to hold all parties accountable (Rosenbaum, 2000). Alternatively, suing multiple defendants may also be a sign that the plaintiff does not have sufficient evidence of causation to isolate and name one defendant (Clark, 2000).

Table 8 reports foodborne illness lawsuits by defendant type. Of the 178 court cases, 135 (75.8 percent) named one defendant, 30 (16.9 percent) named two defendants, and 13 (7.3 percent) named three or more defendants, for a total of 234 separate defendants.¹⁴ Most defendants were restaurant franchises with parent companies, the second largest category of defendants.

¹⁴ We did tabulations on up to only three defendants per case because almost all cases had three or fewer defendants. The total number of defendants is slightly underestimated because a few cases had four or more defendants.

Table 6—Food items involved in foodborne illness lawsuits decided by jury verdicts, 1988-97

Food item	Lawsuits	
	<i>Number</i>	<i>Percent¹</i>
<i>Single vehicle</i>		
Sandwiches (excluding hamburgers and egg sandwiches)	15	8.4
Seafood (excluding oysters)	11	6.2
Chicken	10	5.6
Hamburgers and ground beef	9	5.1
Oysters	9	5.1
Salad	7	3.9
Sausages and unknown meat	5	2.8
Beverages (excluding milk)	5	2.8
Mexican food	5	2.8
Baked goods (excluding desserts with raw egg)	4	2.2
Chinese food	4	2.2
Packaged meals (e.g., canned food, TV dinner)	3	1.7
Pork	3	1.7
Ice cream	2	1.1
Beef (excluding hamburgers and ground beef)	2	1.1
All other single vehicle (e.g., honey, lasagna)	19	10.8
<i>Multiple vehicle</i> (e.g., "restaurant food," "fast food," "dinner")	46	25.8
<i>Not specified</i>	15	8.4
Total	178	100

¹ Percents may not add to 100 due to rounding.

Table 7—Compensation in foodborne illness court cases by food category, 1988-97¹

Food category	Court cases with award information	Decision for plaintiff	Mean award	Median award	Expected award ²
	Number	Percent	-----1998 dollars-----		
Alleged illness from a specific food	114	26.3	184,652	27,584	48,593
Did not specify food	61	41.0	71,634	18,707	29,358
Total	175	31.4	133,280	25,560	41,888

¹ Only 175 of the 178 court decisions had award information so the award totals do not represent statistics for all court awards.

² The expected award is the mean plaintiff award multiplied by the percent won by plaintiffs. The only cases excluded here are cases for which we did not have information on awards.

Other Information Provided by Court Data

Of the 175 court cases with award information, public health authorities were involved in 23 (13 percent), and of these 23 lawsuits, plaintiffs won 11 (47.8 percent). Both plaintiffs and defendants used expert witnesses. Expert witnesses, such as physicians, are likely to be called only when their testimony is considered essential. Plaintiffs called one or more physicians as expert witnesses in 67 percent of the foodborne illness lawsuits. In contrast, only 45 percent of the defendants called physicians. The disparity in the use of medical experts shows that establishing the role of a foodborne pathogen in causing an illness was a more important issue for plaintiffs because they have the burden of proving that a food caused the illness.

Key Findings

Despite their greater reliance on medical experts, most consumer plaintiffs failed to convince juries that defendant firms were legally responsible for causing their illness. One-third of the foodborne illness lawsuits (31 percent) resulted in a monetary award for the consumer. Only a few of the jury verdict summaries provided commentaries describing why juries decided in favor of firms rather than consumers. Some of the specific reasons cited for deciding in favor of firms included failures by plaintiffs to prove that a food product was defective or to prove that the plaintiff actually consumed the food product.

However, even if plaintiffs receive awards, the awards may not cover the costs incurred from the illness and

Table 8—Defendants in foodborne illness court cases by firm type, 1988-97

Defendant	Total defendants ¹	
	Number	Percent
Restaurants	74	31.6
Foodstores	27	11.5
Distributors	11	4.7
Manufacturer ²	29	12.4
Parent	60	25.6
Other ³	33	14.1
Total	234	100.0

¹ Of the 178 court cases, 43 had multiple defendants for an overall total of 234 defendants. Tabulations were performed on up to three defendants per case. The number of defendants is underestimated for cases with more than three defendants because of insufficient information.

² Includes producers such as dairies and egg farms.

³ Includes nine people, five hotel restaurants, three insurers, two each of clubs, cruise lines, food service, and vending machine firms, and 1 each of casino, deli, department store, fair vendor, government entity, investor, psychiatric institution, and railroad.

from pursuing litigation (e.g., court costs and legal fees). Although the WLN data provided some information about the costs of illness—medical expenses and lost productivity, for instance—the data did not provide information about the costs of pursuing litigation, and the data were too weak to compare the costs of illness for each case against the monetary outcome of each case.

The data do, however, provide some insight into the magnitude of the claimed medical expenses and claimed lost productivity. Of the 178 court cases, 81 provided at least partial information on claimed medical expenses, ranging from \$18 to \$342,830, with a median of \$5,612 (mean \$19,292), and 42 provided some information about claimed lost productivity, ranging from \$30 to \$274,966, with a median of \$1,905 (mean of \$20,151) (all in 1998 dollars).

Even with a favorable verdict, plaintiffs may not receive damages set by a jury if: (1) the defendant does not have enough money or insurance to cover the award, (2) the award exceeds a State-mandated cap, or (3) a jury award is reduced by the trial judge or during settlement discussions prior to appeal, or on appeal (Broder, 1986).

Information about the defenses used for the foodborne illness lawsuits is incomplete and may not be representative of all defenses. However, in 26 lawsuits, the

defense argued that no one else became ill with foodborne illness. In 10 lawsuits, the defense argued that the plaintiff had a pre-existing illness that either was the cause of the current illness or was the current illness. In 19 lawsuits, the defense argued that the timing of the specific foodborne illness after ingestion of allegedly contaminated food was inconsistent with the incubation period of that foodborne illness. In six lawsuits, the defense admitted liability.

Multivariate Analyses of the Court Data

We consider three general factors potentially affecting foodborne illness jury verdicts: lawsuit characteristics, plaintiff characteristics, and defendant characteristics.

Lawsuit Characteristics

In addition to the strength of the case, plaintiff litigation success rates and the amount of awards in court trials generally vary by jurisdiction (e.g., small claims, civil, State, Federal, county) and by the nature of the injury, which is correlated with the type of law (e.g., contract, property, torts, and their subcategories such as product liability in the case of tort law) (Eisenberg, 1991; Daniels and Martin, 1986). Geographic variations may arise because of differences in propensity to sue, access to lawyers and the legal system, or State laws.

Therefore, the first characteristic of a lawsuit considered here is the State where it is filed. Because data were not available by State on all outcomes of the foodborne illness subset of personal injury lawsuits or for personal injury lawsuits as a whole, available Federal data were used to better understand regional differences. Of all Federal district-court civil cases, there were 1,898 completed trials with reported outcomes during 1988-97 for the personal injury subcategory of product liability (Eisenberg and Clermont, 2000). After aggregating by State, plaintiff success rates ranged widely from zero to 66.7 percent, while mean awards ranged widely from \$0 to \$8,160,156.¹⁵ If these results hold for the foodborne illness subset of personal injuries, plaintiffs in some areas of the country may be more likely to win foodborne illness trials and receive larger awards than plaintiffs in other areas.

¹⁵ Updated to 1998 dollars using the Bureau of Labor Statistics' consumer price index (CPI) for all urban consumers.

A second lawsuit characteristic is whether the plaintiff can provide sufficient evidence linking his/her illness to a specific foodborne pathogen that may have been in a food produced by the defendant. This information is likely to have an important effect on the outcome because of the emphasis that the law places on establishing a causal link between an illness and a product.

A third lawsuit characteristic is whether a public health authority was involved. This characteristic is important because the critical issue in most litigated foodborne illness lawsuits is causation: whether the plaintiff can prove that his/her illness resulted from exposure to the particular food item at issue. In outbreak situations, plaintiffs often rely upon the investigating public health authority to supply the epidemiological link; in cases where the public health authority cannot establish the link, the plaintiff's case may be weaker.

A fourth lawsuit characteristic is whether plaintiffs or defendants used medical witnesses to support their case. However, expert witnesses, such as physicians who receive large consulting fees, are likely to be called only when their testimony is considered essential. Merritt and Barry (1999) found that in product liability lawsuits, plaintiffs were more likely than defendants to employ expert witnesses. This makes sense as plaintiffs have the burden of proof. Merritt and Barry did not explore the impact of using these witnesses on case outcomes or awards.

Plaintiff Characteristics

Plaintiff characteristics might influence foodborne illness trial outcomes. Children and the elderly are categories of people particularly at risk from the more severe complications of foodborne illness. Merritt and Barry (1999) found tentative indications that minors were more likely than adults to win malpractice claims. While jurors are not supposed to act on sympathy, they are inclined to favor the plaintiff in cases involving children (Clark, 2000).

Illness severity is another plaintiff characteristic likely to be a factor in whether or not a plaintiff prevails, perhaps partly because more severe cases (e.g., hospitalized cases) tend to have more testing and better documentation to support plaintiffs' claims. Merritt and Barry (1999) used a 12-point scale to rate various degrees of injury to the plaintiff ranging from "1" (pure property damage and no injury to health) to "12" (death), and found that the most severely injured plaintiffs were not more likely to win in court. This outcome may result because severe cases tend to involve

larger damages, in turn increasing the defendant's insurer's incentive to contest the lawsuit. Other studies indicated that awards varied by injury type and severity (GAO, 1989; Rodgers, 1993) and were higher in tort trials involving death (Tabarrok and Helland, 1999).

In addition to medical costs and lost productivity, some plaintiffs in foodborne illness lawsuits claimed other damages, such as emotional distress, loss of consortium (i.e., a spouse's help and affection), and pain and suffering. A dollar value for these damages is difficult to assess because of their subjective nature. If plaintiffs can provide convincing evidence that these complications existed and can be valued fairly, then awards might be higher.

Defendant Characteristics

Defendant characteristics may help explain foodborne illness outcomes as well. According to one hypothesis, if juries perceive that certain defendants can afford to pay more (i.e., have deep pockets), they tend to make these defendants pay higher awards than otherwise. Although some studies, such as Tabarrok and Helland (1991), in the case of jury trials, and Shanley (1991), in the case of awards paid to plaintiffs after post-trial award adjustments, appear to support this hypothesis, Vidmar (1997) raised important questions about the validity of this hypothesis such as whether there were plausible alternative explanations. And, proponents of the deep-pocket hypothesis did not investigate whether affluence affects which side will prevail in court. Plaintiff victories may be less likely in cases against deep-pocket defendants since such defendants may have greater incentives to protect their corporate reputations and market share (i.e., more to lose) and have greater financial resources with which to do so (e.g., hire more and better experts and lawyers). Overall, however, the impact of deep pockets is still unclear, particularly if jurors tend to believe that all defendant food firms have insurance that might cover any award they might decide to give the plaintiff.

Design of Analysis

We performed two multivariate regression analyses to examine the effects of the various factors that might influence whether or not plaintiffs win foodborne illness jury verdicts (Win Model, $n=175$) and the size of the award in the case of plaintiff victories (Award Model, $n=55$). For the Win Model, the logit model was selected to handle the dichotomous dependent

variable, which indicated whether the plaintiff prevailed. Ordinary least squares (OLS) regression was used for the Award Model. The dependent variable for the award amount was highly skewed, so it was transformed to a logged variable.¹⁶

Independent Variables and Their Hypothesized Effects

The Win Model

Table 9 presents the definitions and mean values for the independent variables used in both models. The Win Model included 11 independent variables, which are hypothesized to affect the odds of an award. These independent variables can be categorized into lawsuit, plaintiff, and defendant characteristics.

As a proxy for the unmeasured regional differences potentially affecting the outcome of a lawsuit, a variable representing plaintiff success rates for personal injury lawsuits by State (RATERAW) was included in the model. The data are from an Internet-accessible database of Federal district-court civil cases with reported outcomes, 1988-97 (Eisenberg and Clermont, 2000). States with higher plaintiff success rates in Federal trials for personal injury lawsuits are anticipated to have higher plaintiff success rates in jury decisions for the foodborne illness subcategory of personal injury lawsuits.

Four other independent variables measured the characteristics of the lawsuit. It was anticipated that lawsuits implicating specific foodborne pathogens (PATHOGEN) were more likely to result in plaintiff victories and that public-health officials' involvement (PUBLIC) would provide substantiating information for a plaintiff's claim, increasing the chances of a plaintiff award. It was also anticipated that the plaintiff's chances of prevailing would be increased by plaintiffs' use of medical expert witnesses (PWITDOC) and reduced by defendants' use of these witnesses (DWITDOC).

Another variable, YEAR1993, indicates whether a lawsuit was resolved in 1993 or later, in anticipation that plaintiffs are more likely to prevail after 1993 because of increased public awareness of food safety hazards and related litigation after the large 1993 outbreak

¹⁶ Sample selection models could have also been used here, but we decided that logit and OLS regressions were appropriate for the purpose of this report.

from undercooked hamburgers contaminated with *E. coli* O157:H7. This outbreak was one of the most well-publicized outbreaks in terms of incidence, severity, and legal and economic ramifications, and could have affected jurors' perceptions of the role of firms in causing foodborne illness.

The Win Model also includes two independent variables (HOSPITAL, DEATH) measuring the severity of the plaintiff's illness. We hypothesize that more severe illnesses are more likely to result in plaintiff victories because of greater medical documentation and because juries might be more sympathetic toward these cases. Similarly, a variable indicating whether or not one or more of the plaintiff(s) was a child (CHILD) was included in anticipation that juries may be more sympathetic toward child or infant plaintiffs.

Two variables measured defendant characteristics. The first variable (DEEPPOCK) was included to measure the impact of defendants with "deep pockets" on the plaintiffs' odds of winning. The criteria used to determine whether a defendant had deep pockets were presumed to be met if there was any evidence that the defendant had one or more of the following: (1) three or more retail operations, (2) 40 or more full-time employees, (3) two or more manufacturing plants, or (4) three or more warehouses. Two other defendants, a State government unit and a country club, were also considered to have deep pockets. Under these criteria, roughly half of the lawsuits in our sample had at least one deep-pocket defendant. The anticipated relationship for this variable is unclear. The second variable indicated whether one or more defendants was a restaurant (REST). We anticipated that the plaintiffs' chances of winning would increase if plaintiffs and

Table 9—Definitions and mean values of independent variables

Variables	Win model (win/no win) (N=175)	Award model (award size) (N=55)
RATERAW (the weighted average win rate per State in completed Federal District product liability jury trials for personal injury)	.3005	
PATHOGEN (1 if a specific foodborne pathogen, toxin, or illness was implicated; 0 otherwise)	.4800	
PUBLIC (1 if a public health authority was involved; 0 otherwise)	.1314	
PWITDOC (1 if the plaintiff employed one or more doctors as expert witnesses; 0 otherwise)	.9657	
DWITDOC (1 if the defendant employed one or more doctors as expert witnesses; 0 otherwise)	.5600	
YEAR1993 (1 if the lawsuit was resolved in 1993 or later; 0 otherwise)	.5086	.3818
HOSPITAL (1 if the plaintiff(s) was hospitalized; 0 otherwise)	.3429	.3455
DEATH (1 if the lawsuit involved a death; 0 otherwise)	.0343	.0727
CHILD (1 if one or more of the plaintiff(s) was a child; 0 otherwise)	.0914	.1091
DEEPPOCK (1 if one or more of the defendants had "deep pockets"; 0 otherwise)	.5429	.3455
REST (1 if one or more of the defendants was a restaurant; 0 otherwise)	.4229	
CHRONIC (1 if the lawsuit involved a chronic complication; 0 otherwise)		.1636
DISTRESS (1 if plaintiffs claimed emotional distress; 0 otherwise)		.1091
LOSSCONS (1 if plaintiffs claimed loss of consortium; 0 otherwise)		.1091
PAINSUFF (1 if plaintiff claimed pain and suffering; 0 otherwise)		.1455
AVGRAW (the average award in thousand dollars per State in completed Federal District product liability trials for personal injury)		\$2,081.78

Table 10—Multivariate analyses of foodborne illness jury verdicts

	Win model (win/no win)		Award model	
	Predicted relationships	Logit coefficient	Odds ratio ¹	Regression coefficient
INTERCEPT	—	0.77 (0.94)	—	9.29 (0.43)
RATERAW	+	-2.29 (2.51)	0.10	
PATHOGEN	+	0.97* (0.41)	2.63	
PUBLIC	+	0.28 (0.58)	1.32	
PWITDOC	+	0.06 (0.24)	1.06	
DWITDOC	-	-0.93** (0.36)	0.39	
YEAR1993	+	-0.64 (0.39)	0.53	-0.22 (0.38)
HOSPITAL	+	-0.07 (0.43)	0.94	1.12** (0.39)
DEATH	+	1.34 (1.02)	3.82	3.06** (0.67)
CHILD	+	0.53 (0.62)	1.69	0.28 (0.60)
DEEPPOCK	?	-1.24** (0.39)	0.29	0.41 (0.38)
REST	+	-0.51 (0.40)	0.60	
CHRONIC	+			1.62** (0.47)
DISTRESS	+			0.95 (0.60)
LOSSCONS	+			0.82 (0.57)
PAINSUFF	+			0.25 (0.50)
AVGRAW	+			-0.0001 (0.0001)
Sample size		175		55

*Significant at the .05 level.

**Significant at the .01 level.

Numbers in parentheses are standard errors.

¹ The odds ratio is the marginal logit effect.

defendants are relatively close together in the chain of food production, distribution, and consumption, such as the relationship between a restaurant and a restaurant customer, facilitating the identification of linkages between an illness and a responsible firm.

The Award Model

The Award Model has 10 independent variables, 5 of which were also included in the Win Model: HOSPITAL, CHILD, DEATH, YEAR1993, and DEEPPOCK. All five were anticipated to have positive relationships with award amount. An additional severity measure was added for chronic complications (CHRONIC) in anticipation that the associated higher costs would increase awards. The Award Model also included variables for claims such as emotional distress (DISTRESS), loss of consortium (LOSSCONS), and pain and suffering (PAINSUFF); all were expected to raise award amounts. The final variable is the average Federal personal injury award (in thousand dollars) by State (AVGRAW) using the Eisenberg and Clermont (2000) data. We anticipated that States with higher Federal awards for personal injury lawsuits would also have higher jury awards for the foodborne illness subcategory of personal injury lawsuits.

Regression Results and Interpretation

The Win Model

Table 10 presents the findings of the multivariate analyses. The logit regression provides an odds ratio which measures the multiplicative effect of the independent variables on the odds of a plaintiff judgement. The max-rescaled R² is 0.2791 for this model (a pseudo-R² for models with binary dependent variables, provided by SAS).¹⁷

In the Win Model, DEEPPOCK, DWITDOC, and PATHOGEN all had statistically significant effects on the plaintiff's chances of winning. When the lawsuit involved one or more deep-pocket defendants, the odds of a judgment for the plaintiff decreased by 29 percent, suggesting that defendants with greater financial resources were either more successful in their defense or more likely to settle stronger cases out of court.

¹⁷ For a general linear model, Cox and Snell (1989, pp. 208-209) proposed a generalized coefficient of determination, and this was later adjusted by Nagelkerke (1991) for use in models with binary dependent variables (i.e., the max-rescaled R²).

When the defendants used medical experts, the odds of a plaintiff victory decreased by 39 percent. This relationship was expected as a defendant's medical experts can highlight weaknesses in a plaintiff's case and place doubt in the minds of jurors as to the integrity of any linkages between a particular foodborne illness and the implicated food product. Implicating a specific foodborne illness or pathogen that caused the illness increased the odds of a plaintiff victory by over 260 percent, suggesting that the stronger the link between an ill individual and a particular foodborne pathogen, the stronger the plaintiff's case.

The Award Model

After controlling for the fact that plaintiffs receive larger awards for product liability injury trials in some areas of the country than others, three variables in the Award Model were significant at the 1 percent level: HOSPITAL, CHRONIC, and DEATH (model $R^2=0.5283$; adj. $R^2=0.4211$). These findings make intuitive sense as once it has been decided that the plaintiff will prevail, the injury severity is a determinant of award size. These significant effects accord well with previous research on award size (GAO 1989; Rodgers 1993; Tabarrok and Helland, 1999) and suggest that juries try to fairly compensate plaintiffs for their losses. Meanwhile, claimed emotional distress, loss of consortium, and pain and suffering were not significantly influential in determining damages, perhaps because of the subjective nature of these claims. The nonsignificant effect of both DEEPPOCK and CHILD also fits this picture: juries are compensating for a specific injury, regardless of whether or not the plaintiff was a child or if the defendant had deep pockets.

Discussion

Our findings emphasize the importance of consumer plaintiffs identifying the particular pathogen that caused their illness, and whether or not the illness was caused by consumer or firm error. The award model showed that juries base monetary awards on illness severity while relatively subjective considerations, such as pain and suffering, emotional distress, and loss of consortium, were not significant factors. Also, whether the plaintiff was a child or whether the defendant had deep pockets were not significant factors.

Undoubtedly the greatest research gaps concern how often foodborne illness lawsuits are filed, how many are settled or otherwise resolved before trial, and how settlements differ from jury verdicts. And, as settlements comprise the bulk of all outcomes and have different characteristics than verdicts, information on settlements is critical to understanding foodborne illness litigation. Future research may provide evidence that the strongest incentives from the legal system for food firms to improve food safety are from the threat of large outbreaks with associated widespread litigation and from the threat of uninsured economic losses.

Chapter 5

Summary

Product liability is a seemingly powerful mechanism for shifting the costs of foodborne illness from the persons who become ill to the firms responsible for the contaminated product. However, high transaction and information costs combined with the structure of the legal system limit the effectiveness of the litigation for compensating ill consumers and providing firms with signals to produce safer food. This report has nine key points, drawn both from the background literature review and from findings from the jury verdict analysis.

Point 1: Litigation for foodborne illnesses attributed to microbial contamination of food by firms is limited because of high information and transaction costs.

Reliable estimates of the annual number of foodborne illness claims and lawsuits are unavailable. However, a review of the evidence suggests that the vast majority of foodborne illnesses attributed to microbial contamination of food by firms do not result in foodborne illness lawsuits. We found that those stricken by a foodborne illness face high information and transaction costs when pursuing legal compensation. In particular, we uncovered several reasons that help explain why legal action is rare:

1. The incubation period between the consumption of contaminated food and the initial symptoms of foodborne illness makes it difficult for consumers to identify the specific food item (and firm) which caused their illness.
2. Physical evidence of contamination is rarely available because most food items are likely to have been consumed or thrown out before the initial symptoms of illness appear. Ill individuals rarely save a sample of food to test for contamination.
3. Medical evidence from clinical specimens identifying a specific illness-causing pathogen is rare.¹⁸ Less than half (48 percent) of the foodborne illness lawsuits implicated a specific foodborne pathogen, toxin, or illness, presumably because the plaintiff did not specify

or know them. As a result, many consumer plaintiffs apparently entered court without strong evidence of a causal link between their illness and the defendant's food product.

4. The implicated pathogen may also be associated with multiple foods or may be spread via other routes (e.g., person-to-person contact) (Draper, 1994), increasing the number of potential causes of illness and making it more difficult to prove that the cause was contaminated food from a particular firm.
5. Many processed food products include a variety of ingredients from different sources, further increasing the difficulty of identifying the particular food item (and firm) that caused the illness.
6. Most foodborne illnesses are not part of a well-identified foodborne disease outbreak, limiting the availability of supporting information from public health authorities.
7. The complexity and slow pace of the legal system impose high transaction and information costs for consumers who decide to pursue legal action. The average lawsuit in our data was not tried until more than 3 years after the incident that resulted in illness.
8. Some attorneys may be unwilling to take a food-poisoning case because: (a) they believe that a food product sample containing a pathogen is needed to proceed with a case (untrue), (b) they are not educated about how to proceed with foodborne litigation, and (c) they rely only on court data and therefore think that foodborne illness cases are not worth much (Rosenbaum, 2000).

Other aspects of foodborne illness may also hinder or discourage ill individuals from pursuing legal compensation. In particular, a high proportion of foodborne illnesses are relatively mild and result in only minor financial losses for individual consumers, reducing the incentives to pursue individual legal action. And, most consumers have health insurance, and many workers

¹⁸ However, science is increasingly supplying more and better tools to link specific illnesses to specific food sources, and these tools are being applied more frequently. Foodborne-illness victims may carry antibodies to the impli-

cated pathogen in their bloodstream. Although the presence of an antibody does not show exactly when the illness or exposure occurred, it is one piece of evidence that can be used to meet the causation requirement (Clark, 2000).

have sick leave benefits, limiting their direct financial losses due to foodborne illness.

Point 2: Foodborne illness claims that are settled confidentially are likely to have different characteristics than those that reach court verdicts. This implies that confidential settlements distort legal incentives to produce safer food.

Although we do not have data indicating what percent of foodborne illness claims are resolved through settlements, data on the broader category of product liability cases involving bodily injury indicate that 95 percent of claims are settled out of court, and only 5 percent ultimately reach a court verdict (Viscusi, 1991). These data suggest that even when foodborne illness claims are pursued, most are resolved through settlements between plaintiffs and firms (or their insurers) before trial.

A review of the legal literature also suggests that in general, there are real differences between claims that result in settlements and claims that result in court verdicts (Vidmar, 1997; Eisenberg, 1991). In essence, tried cases are not representative of all claims (Priest and Klein, 1984). For foodborne illness claims, the same distinction appears to hold. Foodborne illness claims that are bona fide (without deceit or fraud) tend to settle while claims that go to trial are typically those where there is a serious causation question or where the amount of damages is disputed (Clark, 2000).

When complaints and lawsuits are settled confidentially, direct economic signals from the legal system about the costs of producing pathogen-contaminated food are usually restricted to the responsible firm and its insurer (which may then decide to raise the firm's premium for product liability coverage).¹⁹ In particular, if there is selection bias determining which lawsuits end up in confidential settlements and which lawsuits end up in court decisions, the representativeness of awards publicized in the media and the associated feedback to other firms to produce safe food will be distorted. Whisper information among firms also occurs, but perhaps more so in more serious cases involving high monetary awards, once again implying that firms do not receive

perfect information about the true costs of producing unsafe food or about the frequency with which firms are actually sued for food contamination.

Point 3: Plaintiffs are unlikely to win awards in foodborne illness jury trials.

It appears that relatively few foodborne illnesses are compensated either through court awards or out-of-court settlements. Of the WLN sample of 175 foodborne illness lawsuits ultimately resolved in court during 1988-97, 31.4 percent resulted in some compensation paid by firms. This suggests that most plaintiffs who go to trial do not have a strong case. Lack of convincing evidence on causation is likely to be the key factor in the low success rate of plaintiffs in court.

Point 4: Plaintiffs were more likely to win jury trials if they could link their illness to a specific pathogen, and more severe illnesses tended to result in higher awards.

Multivariate analyses indicate that the odds of a plaintiff victory increased if a foodborne pathogen or illness was specified and decreased if defendants had "deep pockets" or used medical expert testimony. This highlights the importance of a plaintiff's being able to link the illness to a specific foodborne pathogen in order to prevail in court. Higher awards were given when the illnesses involved hospitalization, death, or chronic complications.

Point 5: The expected monetary compensation from a foodborne illness lawsuit provides only limited incentives to pursue litigation.

Most foodborne illnesses are relatively mild and do not result in high medical costs or lost productivity costs. And of those illnesses that are more severe and result in higher costs, some portion of these costs is likely to be covered by other parties such as health insurance and employers. Therefore, most people with foodborne illness have weak monetary incentives to take legal action to recover damages.

Only a third of jury trials involving injuries due to pathogen-contaminated food products resulted in monetary compensation for the injured consumer. However, some of these consumers received substantial sums (mean award was \$133,280), significantly elevating the expected award (\$41,888) above the median award (\$25,560) (all in 1998 dollars). It is possible that plaintiff lawyers might be misled by this seemingly high expected award and accept weak claims to pursue in the legal system. Consumer plaintiffs seldom receive all of the awards because a sub-

¹⁹ Insurers actually share information about losses, and use this information to estimate risks and set premiums. So the economic signals are sent indirectly to the insurance market and subsequently also to other firms when premiums are raised. However, increases in premiums encourage food firms to produce safer food only if the firm links the premium increase to its food safety record.

stantial portion (typically one-third or more) is usually used to pay legal fees and court costs. Out-of-pocket medical expenses, lost productivity, and other costs incurred because of the illness reduce the net award to the plaintiff even further.

Point 6: Foodborne illness costs are shared by many sectors of the economy, in turn limiting incentives to firms to produce safer food.

Although we do not have reliable estimates of the total costs of illness to all sectors that are caused by safety lapses by food firms (as opposed to errors by consumers), the estimate is likely to be substantial. And, we suspect that food firms pay directly for only a small, unknown, portion of the total costs of illnesses caused by their errors. For example, much of the costs of illness borne by people who became ill (and/or their families) are not reimbursed by the food firms responsible. Instead, they are paid for by the ill consumer or his or her household, shifted to other parties such as employers, private health insurers, and governments (and in turn, taxpayers), or handled by some combination of these parties.

Because a large share of the foodborne illness costs are borne by consumers who become ill or by other sectors of the economy, firms receive only limited feedback to produce safer food. If food firms have sufficient product liability insurance to cover a lawsuit, they may not feel the full financial impact, even if their premiums and those of similar firms should increase. One implication of the current social allocation of foodborne illness costs is that food firms probably underinvest in food safety.

Point 7: Legal incentives probably work better in outbreak situations and less well for sporadic cases.

Incentives for firms to avoid foodborne illness outbreaks are probably stronger than the incentives to avoid isolated, sporadic cases of illness because outbreaks have greater potential to damage firms. Public health authorities are also more likely to become involved in outbreaks and technological advances have improved the chances that widely scattered cases will be traced back to a source and linked to each other.²⁰ For example, CDC traced the 1998 listeriosis outbreak (80 illnesses, 21 deaths) to hot dogs and luncheon

meats produced and sold by Bil Mar and Sara Lee (FSnet, Aug. 27, 1999).

One issue needing study is how legal incentives from outbreaks differ by size of firm. Most firms are small operations, not giant national entities. Small firms are probably less prepared to deal with legal consequences of foodborne illness than are large firms due to differences in insurance coverage, economic resources, size of market, in-house legal and disaster management expertise, and so forth. If small firms have limited insurance, they may have much higher incentives to see that claims are resolved because of the risk that claims will outstrip coverage or that even modest local publicity will hurt near-term business (Clark, 2000).

It is primarily the business disruption and negative publicity of the catastrophic foodborne illness or outbreaks that cost firms money so it is these extraordinary, nonrecurrent illnesses or outbreaks that have the potential to substantively shape corporate behavior (Clark, 2000). In the rare instances where foodborne disease outbreaks are linked to particular firms, the impact on those firms can be large. For example, Foodmaker Inc. [now Jack in the Box Inc.] lost an estimated \$160 million in the first 18 months after the 1993 *E. coli* O157:H7 outbreak (Roberts et al., 1997).²¹

Point 8: It is unclear whether foodborne illness litigation will become more common in the future. However, class action lawsuits may become more common in the case of outbreaks where many persons have similar, mild illnesses.

It is unclear whether foodborne illness litigation will become more common in the future. Foodborne illness—and the reasons for litigation—may decrease if firms continue to improve quality control practices to ensure safer food. In contrast, improvements in pathogen detection and identification techniques (including DNA fingerprinting and more rapid microbial tests) may increase the chances that foodborne illnesses (particularly outbreaks) will be detected and linked to specific food products and firms. Attorneys who specialize in personal injury cases may also

²⁰ This may mean that there will be an increase in the number of small outbreaks detected and a drop in the average size of reported outbreaks.

²¹ Also, in the 6 months following the 1998 recall of Sara Lee Corp. hot dogs and deli meats due to contamination with *Listeria*, sales of Sara Lee meat products fell by about \$200 million and the company's stock price fell by 19 percent, reducing the company's value from \$25 billion to \$20.3 billion (FSnet, Aug. 27, 1999).

become more interested in handling foodborne illness litigation as scientific and technological advances make it easier to link foodborne illnesses to individual firms. In addition, increasing consumer awareness that food products may be contaminated by pathogens could increase the likelihood of a claim after a foodborne illness occurs (Clark, 2000). The experience of Marler-Clark (the law firm that has handled more foodborne illness litigation in the United States than any other law firm) is that consumers are increasingly interested in exploring legal recourse when made sick by food (Clark, 2000). But, these trends may encourage food firms to further improve quality control standards to reduce the risk of producing contaminated food products that might cause illness and result in litigation.

Several law and consulting firms now specialize in foodborne illness lawsuits. Class action or “mass” lawsuits may be more frequently used in the case of outbreaks resulting in many similar, mild illnesses, particularly as identification and documentation of outbreaks improves, as legal expertise in this area grows, and as media coverage of successful class action suits involving consumer products accumulates.

Point 9: The legal system provides incentives, though limited, for firms to produce safer food.

Because firms responsible for the microbial contamination compensate relatively few foodborne illnesses, the legal system provides only limited feedback to firms about the need for greater food safety. The product liability system provides firms with incentives to control hazards in food primarily when the hazards are easily identifiable, the foodborne illness can be traced back to firms, and ill individuals or their families are compensated by the firms responsible for the contamination. These findings suggest that the direct impact of litigation on firms is small, although few if any firms are likely to ignore the potential legal consequences of making or distributing contaminated food products that might cause illness or death. And, firms cannot ignore the risk that they may face catastrophic losses if they produce contaminated food. It is difficult to assess exactly how firms are affected by such legal action because the actual decisionmaking process on food safety issues by firms is generally kept confidential.

However, the small percentage of foodborne illness jury trials that are resolved in the public view may have an indirect, possibly significant, impact on the behavior of the defendants and other firms. This is particularly true for lawsuits that attract adverse media

attention. Other firms may decide to increase investments in food safety after observing the economic costs to defendant firms accused of producing contaminated food products that caused foodborne illness.

Economic costs from these lawsuits that food firms wish to avoid include: (1) the potentially high legal costs and court fees involved in defending lawsuits, (2) the compensation payments and possible punitive damages when the defendant firm is found liable, and (3) business losses as a result of trial publicity. These business losses include the loss of reputation of firm or product, reduced product demand, reduced stock prices, higher premiums for product liability insurance, temporary plant closings for cleanup, or permanent plant closings following adverse publicity about a foodborne illness lawsuit, even when the firm successfully defends itself. Catastrophic financial losses for defendants may result even when the law is apparently in their favor. In addition to the possibility of incurring these economic costs, the uncertain outcome in the case of jury trials may be daunting, particularly for more risk-averse firms and firms with lower equity.

For example, an effective, industry-generated, food safety reform occurred after the large 1993 outbreak from hamburgers contaminated with *E. coli* O157:H7 and subsequent litigation. Jack in the Box, Inc., revamped its food safety program and significantly altered the practices of the fast food industry with respect to protein products (Clark, 2000). As we are increasingly able to identify the source of a foodborne illness, the power of litigation to shape industry behavior about food safety will increase (Clark, 2000).

Future research should focus on developing a better understanding of the litigation process because foodborne illness lawsuits are a potentially important economic signal to firms to invest more in food safety. Specific questions for research include determining: (1) how often lawsuits are filed, (2) how often lawsuits are settled or otherwise resolved before trial, and (3) how settlements differ from court decisions. This information about noncourt cases is critical to improve understanding of the extent of foodborne illness lawsuits and the true probability that plaintiffs will be compensated for damages caused by foodborne illness. Consumer complaints and out-of-court settlements are far more frequent than lawsuits that go to trial and may be the most common signals about the costs of unsafe food received by firms.

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Appendix

Product Liability Law As It Applies to Foodborne Illness

The Legal Process

A person affected by foodborne illness who believes he or she can identify the injurer (i.e., the party responsible for the foodborne illness) can attempt to obtain compensation for his or her costs of the illness by directly contacting the injurer, contacting the injurer's insurer, consulting an attorney about pursuing litigation, or some combination of these actions (Hensler et al., 1991). A claim is any effort, including the filing of a lawsuit, by an individual or group to obtain compensation, directly or through an attorney, for injuries or illnesses suffered. This appendix provides some background on U.S. product liability law as it relates to foodborne illness, a type of personal injury.

Most people pursuing foodborne illness litigation (plaintiffs) hire attorneys as the first step, but the formal litigation process begins once a document called a complaint is filed in a court, describing the illness, citing laws that may have been violated, and identifying one or more parties or defendants allegedly responsible for the illness.

- *Plaintiffs* are generally individuals seeking compensation for their foodborne illness but may also include parents on behalf of dependent children, guardians on behalf of legally incompetent individuals, and estates seeking monetary damages in cases of wrongful death. Plaintiffs may also include food companies who sue suppliers or others in the food distribution chain for loss of reputation and goodwill, loss of profits, and other damages.

- *Defendants* are usually firms that produce, process, distribute, or sell food products although they may occasionally include individual proprietors, employees such as food servers, or even hosts of informal meals or other events where food was served.¹ Almost all firms in the food industry have some form of insurance protection against a foodborne illness claim (Clark, 2000). When one of these firms is sued, the insurance company provides a legal defense at the insurer's cost

and pays any resultant settlement or judgment (Clark, 2000).² (For simplicity here, we use the term "firms" to include both defendants and their insurers.)

Comprehensive data on the proportion of foodborne illness claims that become lawsuits or the proportion of foodborne illness lawsuits that reach different stages of the litigation process are unavailable. However, what is clear is that most of the 76 million foodborne illnesses in the United States each year never result in a foodborne illness claim. Among the claims that are pursued, the vast majority is resolved without a trial through settlements and other types of negotiations. Among the claims that become lawsuits, relatively few reach the courtroom to be resolved in jury trials. Only a very small portion of jury verdicts is later overturned through post-trial motions or following appeals from dissatisfied plaintiffs or defendants.

Some legal experts believe that unlike some other areas of law such as auto accident claims where there is a higher proportion of fraudulent claims, most foodborne illness claims are bona fide (Clark, 2000), which means without deceit or fraud (Black's Law Dictionary, 1975). And because most foodborne illness claims are bona fide, they are resolved without a trial (Clark, 2000). Settlements occur when firms pay compensation to plaintiffs prior to trial.³ Legal analysts believe that clear cases of product liability settle relatively quickly while more complex cases go to trial

² Litigation may be very costly for firms, even when they have insurance coverage (e.g., business disruption, negative publicity, reduced product demand).

³ Most cases are settled out of court through informal negotiations between the lawyers for each side. Other cases are settled through alternate dispute resolution (ADR) procedures such as mediation and arbitration. *Mediation* involves both parties agreeing to the selection of an independent third party (mediator) who will help the parties resolve the issues between them, reach a settlement, and draft a mediation agreement. This agreement is binding upon the parties and is enforceable by the courts. *Arbitration* occurs when the parties, either by prior contact, or by court order, submit their dispute to an impartial person or group of people for resolution. In this report, the term "settlements" is used to cover all types of formal and informal negotiations through which a lawsuit is resolved.

¹ Employees will rarely be named individually in a lawsuit, and then only for tactical reasons (Clark, 2000). They will face no individual liability (Clark, 2000).

(Eisenberg, 1991). Foodborne illness claims that become lawsuits are typically those where there is a serious causation question or where the amount of damages is disputed (Clark, 2000). In the case of medical malpractice lawsuits, Vidmar (1997) found that there is a selection process whereby the cases with ambiguous evidence tend to be decided by juries. This pattern suggests that court cases are not representative of all claims (Priest and Klein, 1984).

Firms have incentives to settle and keep the terms confidential in order to limit legal costs, avoid the uncertain outcome of a public trial and delays to resolution, avert the potentially adverse impact of a public trial on the reputation of the firm or its products, and avoid encouraging copycat claims and lawsuits. National or well-known food firms may be particularly likely to settle cases quickly (Rosenbaum, 1998). Because defendants' insurers are risk averse, settlements will always predominate in bona fide claims (Clark, 2000).

An extensive 1989 survey of accidental personal injuries by RAND found that liability claims were filed in 3 percent of accidents such as product-related injuries, slips, and falls, excluding work-related and motor vehicle accidents (Hensler et al., 1991). The claim rate may be even lower for foodborne illness than for other types of personal injuries because the cause of injury is not immediately apparent and identification of the source of contamination is often difficult or impossible. Although these data are for accidents, foodborne illness and accidents are similar in that the greater the injury, the greater the incentive to sue.

Earlier data from the 1977 Insurance Services Office Product Liability Closed Claims Survey of 23 insurance companies (n=10,784 claims) indicate that 19 percent of claims against insurers were dropped by the plaintiffs. An estimated 95 percent of other claims were settled out of court, and only 5 percent ultimately reached a court verdict by a jury or a judge (Viscusi 1991).

The significant number of confidential settlements that keep the monetary value and other information on a case out of publicly available court records, legal summaries, and the media suggests that the available data on foodborne illness settlements underestimates the relative number of plaintiffs compensated through settlements. The average compensation may also be underestimated if cases with the potentially highest damages are more likely to be settled out of court and kept confidential. On the other hand, the average compensation may be overestimated if plaintiffs' lawyers

tend to publicize the largest settlements. Either way, the direct feedback and information to other firms about the costs of producing safer foods is distorted and limited. However, when insurers pay for a large foodborne illness claim, they may raise the premium rates of similar firms, in effect providing indirect feedback to firms about the costs of not producing safer food. Insurers may also drop firms that cause repeated insurance losses. And big settlements always generate whisper information (i.e., private discussions) among firms, and repeat offenders face pressure from insurers or risk losing market share to safer competitors (Clark, 2000).

U.S. Product Liability Law Is State Law

Product liability law governs most legal actions arising from foodborne illness. This branch of tort law describes the circumstances under which one can recover damages for a defective food item. The laws of individual States govern the nature and extent of compensation that may be awarded for injuries or deaths due to contaminated food products (Clark, 2000). There is no uniform and comprehensive Federal law governing product liability in the United States. State trial courts (e.g., District or Superior court) have jurisdiction over foodborne illness cases. However, some foodborne illness cases are litigated in Federal courts (Clark, 2000). These cases are typically removed from State court to Federal court when the defendant firm invokes diversity jurisdiction (Clark, 2000), such as when the parties are from different States, or when one party requests a trial in Federal court as a means to minimize perceived biases which would negatively impact the party if the case were tried locally. Most plaintiff lawyers, however, prefer to represent their clients in State courts (Clark, 2000).

The annual number of product liability cases is unknown. Michael Saks, a University of Iowa law professor, estimates that there may be up to 90,000 product liability cases (all kinds, not just foodborne illness) filed in State courts each year (Mergenhagen, 1995). In 1993, there were 18,959 product liability cases filed in Federal courts, up from 2,393 cases in 1975 and 8,026 cases in 1983 (Mergenhagen, 1995).

Causes of Action

The complaint a plaintiff files in court must identify or specifically state one or more legally recognized causes of action, facts supporting the elements of a cause

of action, and a demand for damages or some other form of judicial relief. Buzby and Frenzen (1999) outline the three main causes of action raised in foodborne illness lawsuits: strict product liability, negligence, and breach of express or implied warranty (table 11, fig. 2). Additionally, plaintiffs may also raise other issues such as misrepresentation (Quesada, 1995); however, these would not be separate claims.

Strict Product Liability

To recover monetary compensation from the defendant under a strict product liability cause of action, the plaintiff must prove that the product was defective and unreasonably dangerous when it left the manufacturer's control and that this defect proximately caused the injury (see Harl 1997, p. 7-17). Proximate cause is the legal term for the link connecting the illness or injury with the product defect. The defendant's liability is limited to only "foreseeable damages" suffered by "foreseeable plaintiffs."⁴

In other words, the central issue in most strict product liability foodborne illness cases is causation, i.e., it is the plaintiff's burden to prove by a preponderance of the evidence (more than a 50 percent likelihood) that his illness resulted from the food item at issue (Clark, 2000). If strict liability is proven, the defendant is liable for damages. For example, the defendant's care in manufacturing or handling the product is irrelevant under strict liability and is not considered a defense (Clark, 2000). The focus is not on whether the defendant food firm did anything wrong, but simply whether the illness in question can be traced to its product. Strict liability is usually unsuccessful in foodborne illness litigation.

One consideration by the courts is the recognition that most foods cannot be made risk-free. For example, *Campylobacter* is a naturally occurring bacteria found in poultry that may contaminate poultry products despite intensive efforts to prevent, reduce, or eliminate contamination. Therefore, the defendant may not be held liable for the contamination.

Consumers do not have legal recourse if they are fully aware of the product's health risks but voluntarily proceed to use or consume the product and are injured by

⁴ *Foreseeable damages* are consequences or damages that an ordinary person would reasonable expect to occur, and *foreseeable plaintiffs* are plaintiffs than an ordinary person might expect to be potential plaintiffs.

the product.⁵ One example is if a person with liver disease knows the risks of eating raw oysters yet still continues to eat them and then becomes ill. Another consideration in determining liability is whether or not consumers can and did take precautionary measures while handling and cooking food. The tapeworm, *Trichinae*, in raw pork does not make the pork defective and "unreasonably dangerous" to consumers because consumers are generally aware of the risks of eating undercooked pork and know that they can eliminate this risk by cooking pork thoroughly.⁶

Liability for microbial contamination of restaurant food does not fall on the consumer because the consumer had little if any control over how the food was prepared. As an aside, liability for other hazards associated with restaurant foods is less clear cut. For example, a consumer in a restaurant situation is still expected to examine the food for obvious physical hazards, such as bones in a whole intact chicken leg. However, the situation is less clear when a physical hazard, such as bone fragments are present in shredded chicken, hamburger patties, or other foods.⁷ In these situations, liability will fall with the party who was in the best position to examine the food and remove the hazard.

Negligence

Negligence in foodborne illness cases occurs when the defendant fails to exercise "reasonable care" in producing, marketing, or selling the implicated food, and because of this failure, someone became ill. The three elements that the plaintiff must prove in order to recover compensation under this cause of action are: (1) the defendant had a legal duty to exercise "reasonable care" in manufacturing the product and to warn all

⁵ *American Law of Products Liability*, 1987, p. 9, § 81:3.

⁶ Restatement of Torts (2d § 402A); *American Law of Products Liability*, 1987, p. 9, § 81:3. Also, see *Trabaud v. Kenton Ruritan Club, Inc.* (517 *Atlantic Reporter*, 2d Series, 706). Changes are underway in common law--the 1997 Restatement of Torts (3d) tries to eliminate the negligence and strict liability distinction and tries to have a unified approach for product liability. However, the more traditional approach from Restatement of Torts (2d) is described in this report because it is appropriate for the 1988-97 data presented in chapter 4.

⁷ The Restatement (Third) uses an example of a 1-inch chicken bone in a chicken enchilada, raising the question of whether this is a manufacturing defect or an inherent aspect of the product (see Steenson, 1998).

foreseeable users of all foreseeable dangers, (2) the defendant failed to perform this duty, and (3) the defendant's failure to perform this duty caused the plaintiff's injury (Harl, 1997).

In more recent case law, liability through negligence has been extended beyond manufacturers to middlemen such as distributors or warehouses, although relatively few cases have been brought against them because of the difficulty of establishing proximate cause (Harl, 1997). In most instances, retailers are not liable under negligence theory for latent defects unless they represent themselves as the manufacturer, assemble the package prior to its sale (Harl, 1997), or were in a situation where they could have tested the product for safety. Food sellers are expected to use reasonable care to inspect the food that they sell and may be found negligent if there is a feasible procedure for inspecting the food but they failed to use it (American

Law of Products Liability, 1987, p. 6). Sellers are not expected to open sealed containers and inspect the food although some courts have stated the contrary (*American Law of Products Liability*, 1987, p. 6).

Failure to warn consumers of a product's hazards or of a potentially dangerous condition can result in negligence claims, particularly when the law requires warnings or labels yet they were not used. In certain products, manufacturers are legally obligated to provide warning labels to alert consumers about potential dangers. Common warnings are for foreign objects in foods (e.g., "the product may contain" bones, shell, pits, etc.). More recently, there are mandated label requirements for safe handling and cooking instructions on raw meat as well as for refrigeration instruction on smoked seafood packaged using modified-atmosphere techniques (e.g., keep refrigerated at 38° F or less). Manufacturers or product sellers may also be

Appendix table 1—Three causes of action for product liability cases

Cause of action	Focus	Type of law ¹	Description
Strict product liability	Product defect	Tort	To prove a strict product liability action in most jurisdictions, the plaintiff must prove that the product was both defective and "unreasonably dangerous" but need not prove negligence.
Negligence	Manufacturer's	Tort	Either through neglect or carelessness, or seller's conduct, the defendant failed to exercise reasonable care to prevent the product from becoming defective and harming the user. <i>Negligence per se</i> Defendants violate a Federal, State, or local statute or regulation that was specifically designed to prevent the type of injuries that the plaintiff suffered.
Breach of warranty	Whether product conforms to warranty	Commercial	According to the Uniform Commercial Code (UCC), just by selling a product, seller incurs obligations under both implied and express warranties. The plaintiff can recover damages if the product did not conform to one of these types of warranties and was not "reasonably safe." <i>Breach of express warranty</i> The representations or promises relating to the material facts (e.g., safety and wholesomeness) about the products, as described in salespersons' statements, in pictures or writing on food containers, and in advertisements induced the consumer to buy the food. A breach occurs when these representations are not true. <i>Breach of implied warranty</i> <i>Implied warranty of merchantability</i> "The product sold is reasonably fit for the general purpose for which it is manufactured and sold" (Harl, 1997, p. 7-18). <i>Implied warranty of fitness</i> The seller knows the buyer's intended purpose or use of the product and the buyer relies upon the seller's judgment or skill in selecting a suitable product for the purpose.

¹Torts are private or civil wrongs resulting in property damage or personal injury.
Source: Adapted from Buzby and Frenzen (1999) with permission from Elsevier Press.

required by law to provide health warnings for raw milk and unpasteurized juices and for restaurant and retail sale of raw shellfish.

A related cause of action is “negligence per se” which occurs when defendants violate a statute or regulation that was specifically designed to prevent the type of injury the plaintiff suffered. Negligence per se is particularly relevant to the food industry because there are Hazard Analysis and Critical Control Points (HACCP) regulations and/or guidance documents that specify or suggest prevention techniques to follow. These regulations and guidance documents currently cover a broad range of areas including meat and poultry, food service establishments, unpasteurized fruit juices, and fish and fishery products. HACCP regulations require formalized food safety and sanitation programs to be implemented with supporting documentation that they are being followed.

A food firm is at risk of a negligence per se claim if its food products or food service activities are covered by a HACCP regulation but the firm has no HACCP plan in place or does not follow its own written rules, stan-

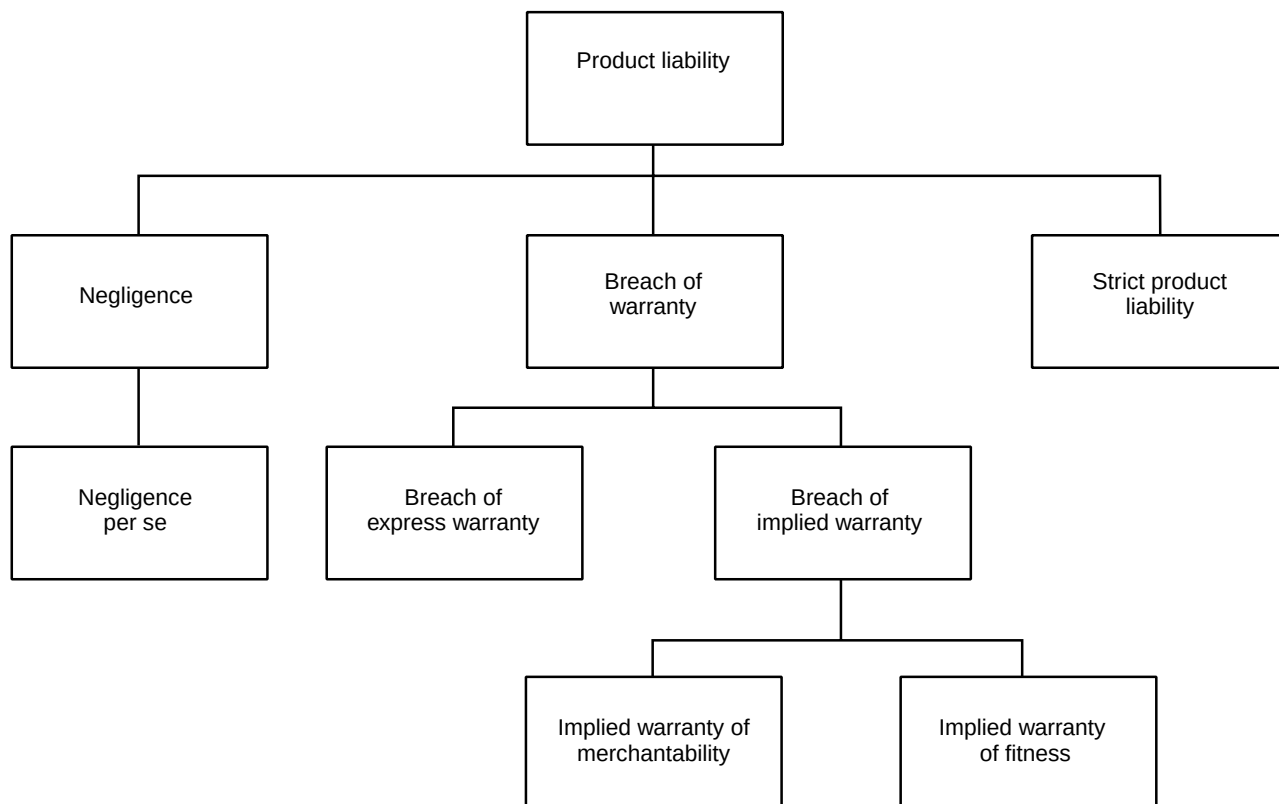
dards, or procedures (Rosenbaum, 1998). For example, in the 1993 outbreak associated with *E. coli* O157:H7 contaminated hamburgers, microbial standards and control procedures were established but not effectively implemented (Rosenbaum, 1998). In particular, the outbreak occurred because some of the fast-food restaurants failed to follow State-required cooking procedures (Tansey, 1993). Unfortunately, compliance with food safety laws and regulations does not guarantee that the food will be free of contamination.

Breach of Express or Implied Warranty

Under the Uniform Commercial Code (UCC), sellers incur obligations called warranties when they sell a product. Breach of warranty is a cause of action that may be claimed in a foodborne illness lawsuit and applies when the food does not conform to either an *express warranty* or an *implied warranty*. In essence, plaintiffs can recover compensation if the food did not conform to a warranty and that non-conforming feature of the product caused the plaintiff’s injury.

Appendix figure1

Schematic of the main causes of action for product liability for food safety issues



An *express warranty* is an affirmation of fact or promise about the food, as made in sales representatives' statements or in pictures or writing on food containers, menus, or advertisements, that induces the consumer to buy the food. The warranty is breached if these representations prove to be false. For example, a company that advertises its eggs as *Salmonella*-free when they are not has breached an express warranty. For food products, express warranties that are commonly breached involve foreign objects in the food (bones for example).

An *implied warranty* requires food to be both merchantable and fit for consumption.

- A product is merchantable if it meets certain prescribed safety standards and is fit for the "ordinary purpose" for which it was sold. For example, raw pork is merchantable because its ordinary purpose is human consumption after thorough cooking to kill foodborne parasites such as *Trichinae*.

- A product must also meet an implied warranty of fitness for a particular purpose in certain representations made about it. In essence, a seller makes an implied warranty of fitness when he knows the buyer's intended purpose or use of the product, and the buyer relies on the seller's judgment or skill in selecting a suitable product. For example, if a seller told a buyer that a particular type of raw fish could be used to make sushi and the buyer became ill from consuming the sushi because it was contaminated with Anisakid parasites, this warranty would be breached.

The plaintiff is not required to show that the food seller was negligent or at fault to recover damages under the implied warranty theory. Instead, the plaintiff must only prove that the seller sold the non-conforming food and that this non-conforming feature of the food caused the plaintiff's illness. This seemingly simple proof is complicated by the issues described below.

Two main tests are used to determine if a food is fit for human consumption and whether there has been a breach of "implied warranty of merchantability." The most commonly adopted test is the reasonable expectation test. This is based upon what an ordinary consumer might reasonably expect to be present in the food (Rubin and Lamb, 1993). For example, would ordinary consumers be aware of the risks from *Salmonella* (*Salmonella* serotype Enteritidis in particular) when they ate lightly poached eggs? Under this test, the socioeconomic, cultural, and demographic characteristics of the individual plaintiff are used to

determine what the plaintiff should have reasonably expected to be in the food.

The second test is the *foreign-natural* test based on the characteristics of the foreign material that caused the injury. Under this test, consumers can recover from injuries caused by an unexpected foreign substance in the food (glass in chicken soup) but not if the same injury was caused by a "natural" material in the food (bone in chicken soup).

Common Defenses in a Product Liability Lawsuit

Issues in product liability lawsuits are usually decided in two stages: determination of liability, and assessment of damages if liability is found. The key issue in determining liability is whether or not plaintiffs can prove causation, that is, link their foodborne illness to the implicated food, to a negligent act or omission by the defendant, or to a defect or non-conforming feature of the implicated food.

Defendants may try to weaken the alleged causal link between the food and the plaintiff's illness by providing evidence that the illness-causing pathogen can be associated with multiple foods or could have been spread via other routes, such as person-to-person contact. The further removed a defendant is from the plaintiff in the chain of food production, processing, and distribution, the more difficult it may be for the plaintiff to establish a causal link. A causal link may be easier to establish between divisions of a vertically integrated company and harder to establish if consumers or intervening parties such as middlemen could also have made food-handling errors. For example, in very rare instances, defendants may claim that the foodborne illness due to home-cooked food was due to the consumers' faulty food-handling and preparation practices. They may also claim that no one else became ill while eating the same food, the food is not a commonly recognized vehicle for the pathogen, or that the timing of the illness is inconsistent with the pathogen's incubation period.

Defendants may try to prove that the plaintiff was fully aware of the health risks but nevertheless voluntarily proceeded to use or consume the food and then became ill. Defendants may also use a plaintiff's preexisting medical condition to try to show that a plaintiff was negligent or reckless. The effect of such counterclaims on case outcomes is unclear.

In general, if the defendant is found liable, damages may be decreased if the defendant: (1) showed that “reasonable care” was taken when producing, handling, and selling the implicated food, (2) used state-of-the-art technology in producing the food, and (3) followed laws and regulations designed to prevent the harm suffered by the plaintiff. A defendant that uses its HACCP records to show that it had exercised all reasonable preventive controls following regulatory guidelines will have a better defense than a firm that cannot (Weddig, 1994).

Legal Compensation for Foodborne Illness

If a defendant in a foodborne illness jury trial is found liable and compensation is awarded to the plaintiff, the award may be based upon components such as medical costs (past, present, and projected, after insurance), lost productivity (e.g., actual salary losses and projected lost future earnings), other dollar losses (e.g., burial expenses, travel costs to obtain medical care), and general losses that are difficult to monetize (e.g., pain and suffering, loss of consortium (i.e., a spouse’s help and affection), disability, psychological and emotional distress).

If there are multiple defendants, *joint and several liability* might be used to allocate the burden of compensating the plaintiff. Historically, if more than one defendant was found joint and severally liable for a single indivisible injury but only one was capable of paying the monetary damages, that defendant might have to pay all of the damages. However, monetary damages are commonly based upon the percent of liability attributed to each defendant. The legal theory of *contributory negligence* apportions liability to the plaintiffs. In some jurisdictions, if the plaintiff is found to be over 50 percent liable for his or her injury, the defendant will not have to pay any damages (Sims, 1995).

Defendant Costs

In addition to any compensation paid to plaintiffs, monetary losses to a corporate defendant from an incident resulting in a lawsuit may include any or all of the following costs: direct and indirect costs of a product recall (including lost product and replacement of product), lost profits, lost sales (i.e., affected products and other product in the same product line or similar product category), loss of customers, reduced market share, loss of business reputation, and legal expenses.

Defendants found liable in foodborne illness cases may also be assessed *punitive damages* if the defendant was found grossly negligent with food production, handling, processing, and sanitation practices and/or willfully contaminated the food. Punitive damages are assessed to punish defendants for their conduct and are based upon the defendant’s ability to pay, not upon the damages suffered by the plaintiff. However, courts seldom award punitive damages (Cooter, 1991). Punitive damage claims do, however, have real legal tactical use in the gathering of information during a lawsuit (*discovery process*) against firms and in leveraging settlements (Clark, 2000). Also, individuals who have intentionally violated a Federal or State law could be subject to criminal prosecution which may lead to additional financial and personal costs such as fines and/or imprisonment (Cooter, 1991).

Discussion

Historically, many attorneys were reluctant to take foodborne illness cases because they did not know how to proceed with them because there is so little precedent (Rosenbaum, 1998). More recently, there has been a system-wide increase in the level of expertise in trying these cases, and more attorneys are willing to accept them (Rosenbaum, 1998). In general, attorneys with less experience with these cases are less likely to be successful (Rosenbaum, 1998).

Meanwhile the medical community is becoming more educated about foodborne disease (Rosenbaum, 1998), and there is increased government surveillance to identify foodborne illness cases, hospitalizations, and deaths. Additionally, new technologies are being developed that can detect foodborne illnesses and pathogens in food (e.g., Pulsed-Field Gel Electrophoresis for examining DNA fingerprints of specific pathogens). Greater information about foodborne illness and greater documentation of sporadic and outbreak cases will assist attorneys in foodborne illness lawsuits.

Class Action Suits

A *class action* suit is “a lawsuit brought by representative member(s) of a large group of persons on behalf of all of the members of the group” (Gifis, 1975). Class action suits began to proliferate in the 1970’s (Mergenhagen, 1995). Courts may agree to accept class action lawsuits in cases involving a large number of plaintiffs with similar damages when it is more efficient to treat the plaintiffs as a group than as individu-

als. However, Federal and State courts are generally unreceptive to requests to certify personal injury claims as class actions because the injuries are rarely similar enough to justify group treatment (Clark, 2000). Some well-known examples of consumer products that have been involved in class action suits include Dalkon shield contraceptive devices, silicone breast implants, and tobacco products.

Class action lawsuits involving foodborne illness have been rare. Severe foodborne illnesses are likely to involve a variety of different symptoms and damages, particularly when chronic sequelae occur. Therefore, injuries of this kind are unlikely to meet the general standard for a class action lawsuit, even in the case of large outbreaks where liability is not contested (Clark, 2000). Class action lawsuits involving foodborne illness are probably most likely to be certified when a foodborne illness outbreak resulted in many mild illnesses with relatively uncomplicated claims for monetary damages.

A large foodborne illness outbreak due to *Salmonella*-contaminated milk linked to Jewel Food Stores in the Chicago area during the late 1980's was apparently the first class action lawsuit involving foodborne illness. Several other foodborne illness outbreaks since then have also resulted in class action lawsuits. The increase in class actions may reflect the widespread media coverage of the successful class action lawsuit involving the 1993 outbreak due to *E. coli* O157:H7-contaminated hamburgers linked to the Jack-In-The-Box restaurant chain. Class action lawsuits involving foodborne illness might become even more common in the future as methods for detecting outbreaks continue to improve, and as lawyers and consumers become more aware of the class action option for recovering damages due to mild illnesses associated with mass outbreaks of foodborne illness.