

TOTAL FOOD RECALL: UNSAFE FOODS PUTTING AMERICAN LIVES AT RISK

NO PROGRESS IN REDUCING FOODBORNE ILLNESS

Over the past few years, Americans have grown accustomed to seeing headlines about tainted food being recalled and pulled off store shelves. These high-profile recalls leave many Americans wondering whether enough is being done to reduce the risk of contaminated food and foodborne illness. And they are right to do so—48 million people get sick from eating tainted food each year, and despite significant costs to our economy and Americans' public health, the number of such illnesses, particularly from Salmonella, has remained stagnant for at least 5 years.¹

More needs to be done to protect Americans from the risk of unsafe food. But important rules, standards, and inspections that could significantly improve food safety have been blocked, underfunded, or delayed, allowing the drumbeat of recalls to continue.

This report is a snapshot look, from January 2011 to September 2012, at recalls that were directly linked to identified incidents of foodborne illness. Failures in the rules and processes that protect our food supply have led to numerous high-volume recalls over the past two years that left many Americans sickened and at least 37 dead. And the economic costs of the illnesses caused by food products recalled over the past 21 months come to over \$227 million.

According to recall information compiled by the Food and Drug Administration (FDA) and the Food Safety Inspection Service (FSIS), from January 2011 to September 2012 there were:

- **1,753** foodborne illnesses linked to recalls of food products;
- **464** hospitalizations due to recalled food products;

- **37** deaths linked to recalls of food products;
- **1,446** incidences of *Salmonella* linked to recalls of food products; and

- **165** incidences of Listeria linked to recalls of food products.

The most important of these outbreaks involved tainted produce, meat, and other food products:

2011:

- **Cantaloupe linked to *Salmonella* outbreak:** This outbreak began in September and ended in October. The outbreak was linked to cantaloupes from a farm in Colorado and spread across 28 states. The contaminated melons caused 147 known illnesses, including 142 hospitalizations.²
- **Ground turkey linked to *Salmonella* outbreak:** This outbreak began in May with the investigation ending in November. The outbreak resulted in 136 illnesses across 34 states with 1 death. In August, Cargill Meat Solutions Corporation recalled approximately 36 million pounds of ground turkey products that may have been contaminated with a multi-drug resistant strain of *Salmonella* Heidelberg. In September, Cargill recalled a further 185,000 pounds of ground turkey that may have been contaminated with *Salmonella* Heidelberg based on sample results from an intensive in-plant investigation by the FDA.³
- **Papaya linked to *Salmonella* outbreak:** A papaya-based *Salmonella* outbreak from January to August occurred in 25 states, with a total of 106 people becoming ill. In July the CDC announced that the FDA was taking steps to protect the public following the identification of *Salmonella* Agona in Agromod Produce, Inc.'s supply of fresh papayas and the company voluntarily recalled all papayas sold prior to July.⁴

2012:

- **Mangoes linked to *Salmonella* outbreak:** On September 13, the FDA alerted consumers about *Salmonella*-contaminated mangoes produced by Agricola Daniella, a Mexican mango supplier. A total of 121 people have been infected with the outbreak strain of *Salmonella* Braenderup from July to August; 15 states were impacted, with 93 people ill just from California.
- **Raw tuna linked to *Salmonella* outbreak:** This outbreak ran from March to April with a total of 425 people infected with strains of *Salmonella* Bareilly and *Salmonella* Nchanga across 29 states. In April the FDA issued two import alerts for fresh and frozen tuna from Moon Fishery (India) Pvt Ltd and conducted a seafood inspection at their India plant. This resulted in a voluntary recall by the company of frozen raw yellow fin tuna products from the facility.⁵
- **Cantaloupes linked to *Salmonella*:** Another cantaloupe foodborne illness outbreak ran from July to September, and made 261 people ill across 24 states. Ninety-four people were hospitalized with three deaths in Kentucky. The majority of the cases were in Kentucky, Illinois, and Indiana.⁶
- **Peanut butter linked to *Salmonella* outbreak:** As of this writing, this is an active and ongoing foodborne illness outbreak. A total of 35 people have been infected with *Salmonella* Bredeney in 19 states. There have been 8 people hospitalized with no deaths so far. Sixty-three percent of the sick are children under the age of 10 years.⁷

These are not isolated examples. In 2011, the Centers for Disease Control and Prevention (CDC) estimated that each year about 1 in 6 Americans get sick, 128,000 are hospitalized, and 3,000 die due to foodborne diseases.⁸

As the number of hospitalizations and deaths reported by the CDC show, foodborne illness can be much more severe than a simple upset stomach, as several foodborne illnesses can cause serious chronic health problems and death. Infection with a certain strand of *E. coli* bacteria can cause hemolytic-uremic syndrome, which causes kidney dysfunction and sometimes kidney failure. Certain types of *Shigella*, *Salmonella*, and *Campylobacter* bacteria can trigger the onset of reactive or chronic arthritis. If a pregnant woman is infected with certain types of *Listeria monocytogenes*, her baby is at risk for developmental delays, paralysis, or blindness.⁹ Not only do foodborne illnesses cause sickness and death, they are also detrimental to the economy. A recent study determined that the aggregated cost of foodborne illness comes to \$77.7 billion per year.¹⁰

TRENDS IN FOOD RECALLS AND FOODBORNE DISEASE

TABLE A shows the total number of foodborne disease outbreaks and illnesses directly linked to food recalls in the United States from January 2011 to September 2012. There were 718 illnesses directly linked to food recalls in the year 2011. In 2012, however, there have already been 1,035 illnesses linked to recalls. If foodborne illness outbreaks continue at this pace then by the end of 2012, we may see twice as many illnesses as there were in 2011.

TABLE B shows the economic costs of foodborne illness for each state over the 21 month period from January 2011 to September 2012. To calculate the costs we used the enhanced cost of illness model developed by Professor Robert L. Scharff. The model accounts for health-related costs associated with foodborne illness such as hospital costs, lab work and inpatient and outpatient care and also incorporates a value for pain and suffering and lost productivity.

In other words, instead of things getting better, they appear to be getting worse. Our food safety practices are falling short. When comparing 2010 infection incidences with national health objective targets, as outlined in Healthy People 2010 (the 10 year national objectives for improving the health of all Americans coordinated by the Department of Health and Human Services), the only incidence rate that meets the target goal was the incidence of infection with *E. coli* O157. The incidence of *Salmonella* was three times the 2010 national health objective target, which is especially alarming, as *Salmonella* causes the majority of hospitalizations and deaths from foodborne disease.

One reason for these high rates of foodborne illness is the rapid increase of food imports. Currently, about 15 percent of all food consumed in the United States is imported,¹¹ and according to the FDA about two-thirds of fruits and vegetables come from foreign food suppliers.¹² It is the responsibility of the FDA to monitor the safety of imported food; however, in 2008 the Government Accountability Office (GAO) found that the FDA inspected only 153 of roughly 189,000 registered foreign food facilities.¹³

MODERNIZING FOOD SAFETY

More must be done to protect Americans from the hazards of unsafe food. An important step towards reforming our food safety laws happened in 2011, when the Food Safety Modernization Act (FSMA) was signed into law. It aimed to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to prevention, putting in place more rules to protect produce, and strengthening inspections of food manufacturing sites. However, shortfalls in funding and rulemaking delays have left the promise of its new protections unfulfilled.

The new law reforms the operations of the Food and Drug Administration (FDA), which is part of the U.S. Department of Health and Human Services (HHS), but does not change the practices of the Food Safety and Inspection Service (FSIS), which is part of the U.S. Department of Agriculture (USDA). There are also about 15 other federal agencies that take part in food regulatory practices, but the FDA and the FSIS together comprise the two main components of the government's food regulatory system.¹⁴ The FDA sets and enforces standards through inspection for all domestic and imported foods except for meat, poultry, and processed eggs, which are the responsibility of the FSIS.¹⁵

NEW PROTECTIONS UNDER THE FOOD SAFETY MODERNIZATION ACT

The FSMA requires the FDA to adopt new regulatory practices that focus on improving prevention, increasing company transparency, enhancing responses to outbreaks, and creating safer foreign food facilities.¹⁶ In particular, before the enactment of the FSMA, the FDA did not have the authority to issue mandatory recalls of food products. The implementation of FSMA now allows the FDA to issue mandatory recalls and perform many new preventative regulatory procedures.¹⁷ However, while the FSIS can issue a recall recommendation to a food manufacturer, they still do not have authority to issue a mandatory recall.¹⁸

To ensure compliance with new food safety standards, the FDA will be required to inspect all high-risk domestic food facilities at least every three years.¹⁹ The FDA now has the authority to detain food products, prohibit a facility from distributing food, inspect foreign food facilities, and prohibit the entry of foreign food into the United States.^{20 21}

If properly exercised, this new authority could significantly reduce the rates of foodborne illness. However, in reality the FSMA is not being implemented effectively. The law is designed with specific implementation deadlines for each new rule or regulation. However the implementation of four important rules on produce safety has been delayed indefinitely in the Office of Information and Regulatory Affairs.²² These delays on produce safeguards are especially concerning since fresh produce was linked to one third of all major outbreaks in 2011, as well as to very significant *Salmonella* outbreaks related to mangoes and cantaloupe in 2012.²³

One important reason for the ineffective implementation of FSMA is simple: the FDA is not being given adequate funding to do the job. In February, the President's budget requested \$4.5 billion for the Food and Drug Administration. But budget proposals in both the Senate and the House fall below this target, coming in \$600-\$700 million below full funding, which the Office of Management and Budget has called "harmful" to food safety regulations.²⁴

The impact of this underfunding can be seen by taking a closer look at two important programs: the Transforming Food Safety Initiative and the Microbiological Data Program.

The Transforming Food Safety Initiative would allow the FDA to establish a prevention-focused domestic and import food safety system. The FDA would be able to better leverage the valuable food safety work of state, local, tribal, and territorial food safety authorities, and gain increased capacity to detect and address the risks of products and ingredients manufactured in China where the food safety regulations are not as strong as our own. However, Congress has attempted to strip funding for the program.

The Microbiological Data Program is a low-cost but high-value USDA program that screens high-risk fresh produce for bacteria—including *Salmonella*, *E. coli*, and *Listeria*. In April 2012, Dole recalled nearly 800 bags of lettuce after *Salmonella* was detected by state health officials conducting random sampling in New York through the microbiological data program and this August lettuce was again recalled in South Carolina through this program.²⁵ Due to public support the USDA decided to continue funding for this program until the end of 2012, but its future is uncertain.²⁶

Beyond these funding shortfalls, there are still several shortcomings of FSMA and of our food regulatory system that threaten food safety. For example, companies are allowed to take up to 18 months to put in place food safety plans, and government inspectors have up to five years to visit high-risk facilities with inspections required every three years thereafter.²⁷ This not an effective way of inspecting high risk facilities. For example, many egg producers are notorious for housing hens in unsanitary and cramped conditions, leading to contaminated eggs. In 2010, 500 million *Salmonella*-tainted eggs were recalled, ultimately causing 1,939 illnesses.²⁸ A system of inspections every three years would also risk problems going undetected for long periods of time.

Further, a recent report from the Government Accountability Office (GAO)²⁹ concluded the American food regulatory framework is fragmented, with responsibility for different foods divided up among various agencies. GAO stated that FSMA “strengthens a major part of the food safety system; however, it does not apply to the federal food safety system as a whole.”³⁰ As discussed earlier, FDA regulates 80 percent of our food supply, but meat, poultry, and eggs are controlled by FSIS under the USDA, which is unaffected by the bill. FDA cannot implement mandatory recalls of meat and poultry, nor can they increase inspections of such facilities.³¹

CONCLUSION

The task of eliminating recalls and reducing foodborne illness is not an easy one. Many federal and state food safety laws were enacted at the beginning of the 20th century. They are now outdated and unable to effectively protect us from foodborne pathogens, particularly in an environment where more and more foods are imported. The rules and inspection systems we have now are not up to the task—and as this report documents, the result has been that the problem of foodborne illness has stayed stagnant and potentially grown worse, taking a substantial toll on public health and our economy.

The Food Safety Modernization Act was an important step towards an improved system that can at last reduce consumers’ vulnerability to unsafe food. But its promise has so far remained unfulfilled, and more must be done to bring recalls to an end:

- The FDA needs to be provided with sufficient funding to effectively implement the food safety measures mandated in the new FSMA law.
- FDA needs to ensure timely implementation of FSMA programs and regulations.
- The FDA should work to improve the food safety capacities of state, local, and foreign agencies by encouraging them to adopt U.S. food safety measures and standards.
- The FDA should develop concrete and specific safety standards to use for the inspection of food facilities, especially those that produce high-risk food products.
- The FDA should perform more frequent and unannounced inspections of high-risk food facilities.
- More resources should be put toward investigating and monitoring unspecified and unknown agents that are causing foodborne illness, since these agents are causing the majority of illness.
- There needs to be greater coordination between the FDA, CDC, FSIS and other federal agencies to ensure our food is safe.

**TABLE A: FOOD RECALLS LINKED TO CONTAMINANT AND STATE
JANUARY 2011 TO SEPTEMBER 2012**

Date	Product	Contaminant	No. of Illnesses	No. of Deaths	No. of States Affected	States Affected
9/22/2012	Sunland, Inc. Peanut Butter Products	Salmonella Bredeney	35 (8 hospitalizations)	0	19	AZ (1), CA (5), CT(3), IL(1), LA (1), MA(3), MD(1), MI(1), MN(1), MO(2),NV(1), NJ(2), NY(1), NC(1), PA(2), RH(1),TX(5), VA(1), WA(2)
9/14/2012	Frescolina, ricotta cheese and Forever Cheese, Inc. ricotta salata cheese	Listeria monocytogenes	18 (18 hospitalizations)	3	13	CA(1), CO(1), DC(1), MD (3), MN (1), NE(1), NJ(3), NM(1), NY(1), OH(1), PA(1), VA(1), WA(1)
9/14/2012	Splendid Products of CA, Daniella brand mangoes	Salmonella Braenderup	121 (25 hospitalizations)	0	15	CA(93), DE(1), HI(4), ID(1), IL(2), ME (1), MI(1), MT (1), NE(1), NJ(1), NY(3), OR(1), TX(2), WA(8),WI(1)
9/13/2012	Chamberlain Farms of IN, cantaloupes	Salmonella Typhimurium and Salmonella Newport	261 (94 hospitalizations)	3	24	AL(25), AR(6), FL(1), GA(13), IA(9), IL(36), IN(30), IA(9), KY(66), MD(1), MI(8), MN(2), MO(17), MS (7), MT(1), NJ(2), NC(5),OH(5), OK(1), PA(2), SC(4), TN(8), TX(2), VA(1),WI(9)
9/13/2012	Cargill Meat Solutions of PA, ground beef	Salmonella Enteritidis	46(12 hospitalizations)	0	9	ME(2), MA(3), NH(3), NY(20), NC(1), RI(3), VT(11), VA(2), WV(1)
7/26/2012	Moon Marine USA Corporation, raw yellowfin tuna	Salmonella Bareilly and Salmonella Nchanga	425 (55 hospitalizations)	0	29	CA(8), CO(1), NE(2), KS(1), TX(15), MO(4), AR(1), LA(6), WI(25), IL(30), MS(2), IN(1), TN(4), AL(5), GA(22), FL(1), SC(5), NC(12), VA(34), PA(37), NY(68), VT(1), NH(2), MA(36), RI(6), CT(11), NJ(42), MD(40), DC(3)
4/6/2012	Jimmy John's Restaurants, raw clover sprouts	E. coli O26	29 (7 hospitalizations)	0	11	AL(1), AR(1), IA(5), KS(2), MI(10), MO(3), OH(3), PA(1), WA(1), WI(1), WV(1)
2/20/2012	The Family Cow Dairy Farm of PA, unpasteurized milk	Campylobacter jejuni	80	0	4	PA(70), MD(5), WV(3), NJ(2)
2/1/2012	Hannaford Supermarkets, ground beef	Multi-drug resistant Salmonella Typhimurium	20 (8 hospitalizations)	0	7	HI(1), KY(1), MA(1), ME(4), NH(6), NY(6), VT(1)
12/8/2011	Jensen Farms of CO, cantaloupe	Listeria monocytogenes	147(142 hospitalizations)	33	28	AL(1), AR(1), CA(4), CO(40), ID(2), IL(4), IN(3), IA(1), KS(11), LA(2), MD(1), MO(7), MN(1),NE(6),NV(1),NM(15),NY(2),ND(2),OK(12),OR(1),PA(1),SD(1),TX(18),UT(1),VA(1) WV(1),WI(2),WY(4)

Source: CDC estimates of Foodborne Illness in the United States.

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Date	Product	Contaminant	No. of Illnesses	No. of Deaths	No. of States Affected	States Affected
11/21/2011	Schreiber Processing Corporation of NY, chicken livers	Salmonella Heidelberg	190 (30 hospitalized)	0	6	NY(109), NJ(62), PA(10), MD(6), OH(2), MN(1)
11/17/2011	Wegman's Food Markets, pine nuts	Salmonella Enteritidis	43 (2 hospitalized)	0	5	MD(1), NJ(2), NY(28), PA(8), VA(4)
11/10/2011	Cargill Meat Solutions, ground turkey	Salmonella Heidelberg	136 (37 hospitalized)	1	34	AL(1), AR(1), AZ(3), CA(7), CO(4), CT(1), GA(2), IL(16), IN(2), IA(2), KS(3), KY(2), LA(1), MA(4), MD(1), MI(12), MN(2), MS(2), MO(7), NE(2), NV(1), NJ(1), NY(3), NC(4), OH(12), OK(2), OR(1), PA(8), SD(3), TN(2), TX(18), UT(1), VT(1), WI(4)
10/20/2011	Larry Schultz Organic Farm of Owatonna, eggs	Salmonella Enteritidis	6 (3 hospitalizations)	0	1	MN(6)
8/29/2011	Agramod Produce, Inc. papaya	Salmonella Agona	106(10 hospitalizations)	0	25	AR(1), AZ(4), CA(8), CO(1), GA(8), IL(18), IN(1), KY(1), LA(2), MA(1), MN(3), MO(3), NE(2), NV(1), NJ(1), NM(3), NY(9), OH(1), OK(1), PA(2), TN(1), TX(25), VA(2), WA(5), WI(2)
7/6/2011	Evergreen Produce, alfalfa sprouts and spicy sprouts	Salmonella Enteritidis	25 (3 hospitalizations)	0	5	ID(3), MT(10), MT (1), NJ(1), ND(1), WA(10)
6/23/2011	Del Monte Fresh Produce, cantaloupe	Salmonella Panama	20(3 hospitalizations)	0	10	AZ(1), CA(2), CO(1), MD(1), MN(1), NV(1), OR(6), PA(1), UT(1), WA(5)
5/10/2011	Oysters from Area 1642, Apalachicola Bay, FL	Vibrio cholerae serogroup O75	11	0	1	FL(11)
4/4/2011	Jennie-O Turkey Store, turkey burgers	Salmonella Hadar	12	0	10	WA(1), CA(1), AZ(1), CO(1), MO(1), IL(1), WI(3), MS(1), GA(1), OH(1)
3/23/2011	Palmyra Bologna Inc. of PA, Lebanon bologna products	E. coli O157:H7	14(3 hospitalizations)	0	5	MD(3), NJ(2), NC(1), OH(2), PA(6)
3/5/2011	DeFranco and Sons of CA, hazelnuts	E. coli O157:H7	8 (4 hospitalizations)	0	3	MI(3) MN(3), WI(1)

Source: CDC estimates of Foodborne Illness in the United States.

**TABLE B: ECONOMIC BURDEN OF FOODBORNE ILLNESS BY STATE
JANUARY 2011 TO SEPTEMBER 2012**

State	Disease Agent	No. of Cases	Cost per Case (Enhanced Model)	Total Cost (Enhanced)
Colorado	<i>Salmonella</i> , nontyphoidal	8	\$11,086	\$88,688
	<i>Listeria monocytogenes</i>	41	\$1,282,069	\$52,564,829
Total				\$52,653,517
Texas	<i>Salmonella</i> , nontyphoidal	67	\$11,086	\$742,762
	<i>Listeria monocytogenes</i>	18	\$1,282,069	\$23,077,242
Total				\$23,820,186
New Mexico	<i>Salmonella</i> , nontyphoidal	3	\$11,086	\$33,258
	<i>Listeria monocytogenes</i>	16	\$1,282,069	\$20,513,104
Total				\$20,546,362
Oklahoma	<i>Salmonella</i> , nontyphoidal	4	\$11,086	\$44,344
	<i>Listeria monocytogenes</i>	12	\$1,282,069	\$15,384,828
Total				\$15,429,172
Kansas	<i>Salmonella</i> , nontyphoidal	4	\$11,086	\$44,344
	<i>Listeria monocytogenes</i>	11	\$1,282,069	\$14,102,759
	<i>E. coli</i> , non-O157	2	\$1,366	\$2,732
Total				\$14,149,835
Missouri	<i>Salmonella</i> , nontyphoidal	34	\$11,086	\$376,924
	<i>Listeria monocytogenes</i>	7	\$1,282,069	\$8,974,483
	<i>E. coli</i> , non-O157	3	\$1,366	\$4,098
Total				\$9,355,505
Nebraska	<i>Salmonella</i> , nontyphoidal	5	\$11,086	\$55,430
	<i>Listeria monocytogenes</i>	7	\$1,282,069	\$8,974,483
Total				\$9,029,913
California	<i>Salmonella</i> , nontyphoidal	124	\$11,086	\$1,374,664
	<i>Listeria monocytogenes</i>	5	\$1,282,069	\$6,410,345
Total				\$7,785,009
New York	<i>Salmonella</i> , nontyphoidal	247	\$11,086	\$2,738,242
	<i>Listeria monocytogenes</i>	3	\$1,282,069	\$3,846,207
Total				\$6,584,449
Illinois	<i>Salmonella</i> , nontyphoidal	104	\$11,086	\$1,152,944
	<i>Listeria monocytogenes</i>	4	\$1,282,069	\$5,128,276
Total				\$6,281,220
Maryland	<i>Salmonella</i> , nontyphoidal	51	\$11,086	\$565,386
	<i>Listeria monocytogenes</i>	4	\$1,282,069	\$5,128,276
	<i>E. coli</i> O157:H7	3	\$10,048	\$40,705
	<i>Camphylobacter</i> spp.	5	\$8,141	\$40,705
Total				\$5,764,511

**TABLE B: ECONOMIC BURDEN OF FOODBORNE ILLNESS BY STATE
JANUARY 2011 TO SEPTEMBER 2012**

State	Disease Agent	No. of Cases	Cost per Case (Enhanced Model)	Total Cost (Enhanced)
New Jersey	<i>Salmonella</i> , nontyphoidal	114	\$11,086	\$1,263,804
	<i>Listeria monocytogenes</i>	3	\$1,282,069	\$3,846,207
	<i>Camphylobacter</i> spp.	2	\$8,141	\$16,282
	<i>E. coli</i> O157:H7	2	\$10,048	\$20,096
Total				\$5,146,389
Wyoming	<i>Listeria monocytogenes</i>	4	\$1,282,069	\$5,128,276
Total				\$5,128,276
Indiana	<i>Salmonella</i> , nontyphoidal	34	\$11,086	\$376,924
	<i>Listeria monocytogenes</i>	3	\$1,282,069	\$3,846,207
Total				\$4,223,131
Pennsylvania	<i>Salmonella</i> , nontyphoidal	70	\$11,086	\$776,020
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
	<i>E. coli</i> , non-O157	1	\$1,366	\$1,366
	<i>E. coli</i> O157:H7	6	\$10,048	\$60,288
	<i>Camphylobacter</i> spp.	70	\$8,141	\$569,870
Total				\$3,971,682
Wisconsin	<i>Salmonella</i> , nontyphoidal	44	\$11,086	\$487,784
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
	<i>E. coli</i> , non-O157	1	\$1,366	\$1,366
	<i>E. coli</i> O157:H7	4	\$10,048	\$40,192
Total				\$3,093,480
Virginia	<i>Salmonella</i> , nontyphoidal	44	\$11,086	\$487,784
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
Total				\$3,051,922
Montana	<i>Salmonella</i> , nontyphoidal	13	\$11,086	\$144,118
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
Total				\$2,708,256
Louisiana	<i>Salmonella</i> , nontyphoidal	10	\$11,086	\$110,860
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
Total				\$2,674,998
Idaho	<i>Salmonella</i> , nontyphoidal	4	\$11,086	\$44,344
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
Total				\$2,608,482
North Dakota	<i>Salmonella</i> , nontyphoidal	1	\$11,086	\$11,086
	<i>Listeria monocytogenes</i>	2	\$1,282,069	\$2,564,138
Total				\$2,575,224
Washington	<i>Salmonella</i> , nontyphoidal	31	\$11,086	\$343,666
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> , non-O157	1	\$1,366	\$1,366
Total				\$1,627,101

**TABLE B: ECONOMIC BURDEN OF FOODBORNE ILLNESS BY STATE
JANUARY 2011 TO SEPTEMBER 2012**

State	Disease Agent	No. of Cases	Cost per Case (Enhanced Model)	Total Cost (Enhanced)
Alabama	<i>Salmonella</i> , nontyphoidal	31	\$11,086	\$343,666
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,625,735
Ohio	<i>Salmonella</i> , nontyphoidal	21	\$11,086	\$232,806
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> , non-O157	3	\$1,366	\$4,098
	<i>E. coli</i> O157:H7	2	\$10,048	\$20,096
Total				\$1,539,069
Minnesota	<i>Salmonella</i> , nontyphoidal	15	\$11,086	\$166,290
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> O157:H7	3	\$10,048	\$30,144
Total				\$1,478,503
Iowa	<i>Salmonella</i> , nontyphoidal	11	\$11,086	\$121,946
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> , non-O157	5	\$1,366	\$6,830
Total				\$1,410,845
Arkansas	<i>Salmonella</i> , nontyphoidal	9	\$11,086	\$99,774
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> , non-O157	1	\$1,366	\$1,366
Total				\$1,383,209
Oregon	<i>Salmonella</i> , nontyphoidal	8	\$11,086	\$88,688
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,370,757
Nevada	<i>Salmonella</i> , nontyphoidal	4	\$11,086	\$44,344
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,326,413
West Virginia	<i>Salmonella</i> , nontyphoidal	1	\$11,086	\$11,086
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
	<i>E. coli</i> , non-O157	1	\$1,366	\$1,366
	<i>Camphylobacter</i> spp.	3	\$8,141	\$24,423
Total				\$1,318,944
D.C.	<i>Salmonella</i> , nontyphoidal	3	\$11,086	\$33,258
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,315,327
South Dakota	<i>Salmonella</i> , nontyphoidal	3	\$11,086	\$33,258
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,315,327
Utah	<i>Salmonella</i> , nontyphoidal	2	\$11,086	\$22,172
	<i>Listeria monocytogenes</i>	1	\$1,282,069	\$1,282,069
Total				\$1,304,241

**TABLE B: ECONOMIC BURDEN OF FOODBORNE ILLNESS BY STATE
JANUARY 2011 TO SEPTEMBER 2012**

State	Disease Agent	No. of Cases	Cost per Case (Enhanced Model)	Total Cost (Enhanced)
Kentucky	<i>Salmonella</i> , nontyphoidal	70	\$11,086	\$776,020
Total				\$776,020
Massachusetts	<i>Salmonella</i> , nontyphoidal	48	\$11,086	\$532,128
Total				\$532,128
Georgia	<i>Salmonella</i> , nontyphoidal	46	\$11,086	\$509,956
Total				\$509,956
Michigan	<i>Salmonella</i> , nontyphoidal	22	\$11,086	\$243,892
	<i>E. coli</i> , non-O157	10	\$1,366	\$13,660
	<i>E. coli</i> O157:H7	7	\$10,048	\$70,336
Total				\$327,888
North Carolina	<i>Salmonella</i> , nontyphoidal	23	\$11,086	\$254,918
	<i>E. coli</i> O157:H7	1	\$10,048	\$10,048
Total				\$265,026
Connecticut	<i>Salmonella</i> , nontyphoidal	15	\$11,086	\$166,290
Total				\$166,290
Tennessee	<i>Salmonella</i> , nontyphoidal	15	\$11,086	\$166,290
Total				\$166,290
Vermont	<i>Salmonella</i> , nontyphoidal	14	\$11,086	\$155,204
Total				\$155,204
Mississippi	<i>Salmonella</i> , nontyphoidal	12	\$11,086	\$133,032
Total				\$133,032
New Hampshire	<i>Salmonella</i> , nontyphoidal	11	\$11,086	\$121,946
Total				\$121,946
Rhode Island	<i>Salmonella</i> , nontyphoidal	10	\$11,086	\$110,860
Total				\$110,860
Arizona	<i>Salmonella</i> , nontyphoidal	10	\$11,086	\$110,860
Total				\$110,860
South Carolina	<i>Salmonella</i> , nontyphoidal	9	\$11,086	\$99,774
Total				\$99,774
Maine	<i>Salmonella</i> , nontyphoidal	7	\$11,086	\$77,602
Total				\$77,602
Hawaii	<i>Salmonella</i> , nontyphoidal	5	\$11,086	\$55,430
Total				\$55,430
Florida	<i>Salmonella</i> , nontyphoidal	2	\$11,086	\$22,172
	<i>Vibrio cholerae</i>	11	\$2,226	\$24,486
Total				\$46,658
Delaware	<i>Salmonella</i> , nontyphoidal	1	\$11,086	\$11,086
Total				\$11,086
Total of All States				\$227,263,040

Source: Economic Burden From Health Losses Due to Foodborne Illness in the United States, Robert L. SCHARFF

ENDNOTES

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