

OUTBREAK ALERT! 2015



A REVIEW OF FOODBORNE ILLNESS IN THE U.S. FROM 2004 - 2013



CENTER FOR
Science in the
Public Interest

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OUTBREAK ALERT! 2015

This issue of Outbreak Alert! is dedicated to Caroline Smith DeWaal, whose recognition of the need for reliable, accurate attribution data on foodborne illness led her to create the Outbreak Alert! Database and this publication. Caroline left CSPI for other career opportunities in June.

Outbreak Alert! 2015 was researched and written by Nils Fischer, MPH, Ariel Bourne and David Plunkett, J.D., J.M. We gratefully acknowledge the assistance of Michael F. Jacobson, Ph.D., in preparing this report. We also thank those working in state and federal public health agencies who provided information and inspiration for this report.

Access to the Outbreak Alert! database with records on solved outbreaks from 1990 to 2013 is available on a fee basis. Contact CSPI for more information.

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Cover Image: Bacteria grow in a petri dish. © lyosha_nazarenko – Fotolia.com

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Executive Summary

“Outbreak Alert! 2015” examines reported outbreaks of foodborne disease from 2004 to 2013, the most recent year for which data are available. Analysis of outbreaks over time can identify trends and highlight gaps in the food safety system, information that reports focusing on yearly outbreaks cannot provide. The data are useful for attribution of particular pathogens to particular foods and for assessing the riskiness of different food categories. This information is critical to helping policy makers make appropriate choices among options for improving public health. “Outbreak Alert! 2015” makes the following findings and recommendations:

Summary of Findings:

- The total number of reported outbreaks has varied little in the last four years, a situation that may reflect the introduction of a standardized, electronic surveillance system that contributed to more consistent reporting of outbreaks from 2010 to 2013.
- The number of outbreaks appear to decline sharply in 2009, but that may be due to changes in how norovirus is classified and not an actual reduction in illnesses from foodborne causes. Other factors creating the appearance of a decline include the availability of rapid diagnostic tests that bypass laboratory-based public health surveillance systems and budget constraints on local public health departments, both of which impact reporting.
- Over the 10-year period, less than 40% of reported outbreaks were solved for both food vehicle and contaminant. In 2013, the rate was 39%, a six-percentage-point improvement over the average of 33% in the previous five years.
- Produce caused more illnesses than any other food category and had the largest number of outbreaks for any single food category. Seafood caused more illnesses *per pound consumed* than any other food category, while fruits, vegetables, and dairy caused the fewest illnesses *per pound consumed*.

Key Recommendations:

- The Centers for Disease Control and Prevention should continue working with state and local health departments to standardize and maintain the consistent reporting rates seen since 2010, while also addressing the disparities in reporting rates among different states.
- Congress should fully fund programs to integrate the foodborne illness surveillance system it directed the CDC to establish in the Food Safety Modernization Act. The funding should be adequate to provide money for food-safety-capacity-building grants to help states enhance their public health surveillance systems.

Introduction

A report that cucumbers contaminated with *Salmonella* Poona sickened 767 people from July through September this year may have seemed a singular event to the public. Yet it is part of a larger story. When compared to other outbreaks over a 10-year period, produce was linked to more outbreaks and illnesses than any other food category. *Salmonella* was the second-leading cause of illnesses sourced to produce.¹

What appears as a single outbreak to the public could be part of a pattern that, when understood, can help guide policies to prevent similar outbreaks in the future. But, that, too, is not the whole story.

A facile analysis of such facts might lead to a decision to take fruits and vegetables out of our diet. Doing that would be unwise as it trades health for safety. Nor do the data support such an action. When calculated in terms of per capita consumption, poultry products are almost twice as likely to cause outbreak-associated illnesses.

“Outbreak Alert! 2015” seeks to help public health officials, policy makers, and consumers understand the main trends of foodborne disease in the United States. It uses the most recent 10 years of outbreak data available from the Centers for Disease Control and Prevention (CDC) to identify food safety trends and highlight gaps and needed improvements in food safety control programs at the government, industry, and consumer levels.

Every year, an estimated 48 million people—one in six Americans—suffer a foodborne illness. Of those, 128,000 are hospitalized and 3,000 die (1). Few of those illnesses are reported to the CDC, and fewer still are solved for both food source and contaminant. For this report, the Center for Science in the Public Interest (CSPI) analyzed foodborne disease outbreaks reported to CDC that occurred from 2004 to 2013. CDC defines a foodborne illness outbreak as the occurrence of two or more cases of a similar illness resulting from ingestion of a common food.

Of the 9,625 outbreaks—responsible for 193,754 illnesses—over the period studied, 3,485—responsible for 86,121 illnesses—were fully solved with both an identified food and contaminant. Though illnesses associated with outbreaks account for less than 1% of all foodborne illnesses, and less than half of those are solved, they nonetheless provide valuable information about which foods and what pathogens present the greatest risk of causing foodborne disease.

Even the numbers don’t tell the entire food safety story, though. In a series of Spotlights, this report details relevant information about other factors that affect food safety such as how poor practices on farms have resulted in major outbreaks, the risk from fraudulently labeled seafood, and the impact of climate change.

With climate change, imported foods, and other dynamic threats to our food system, complete data on outbreaks is ever more essential to shape effective policy.

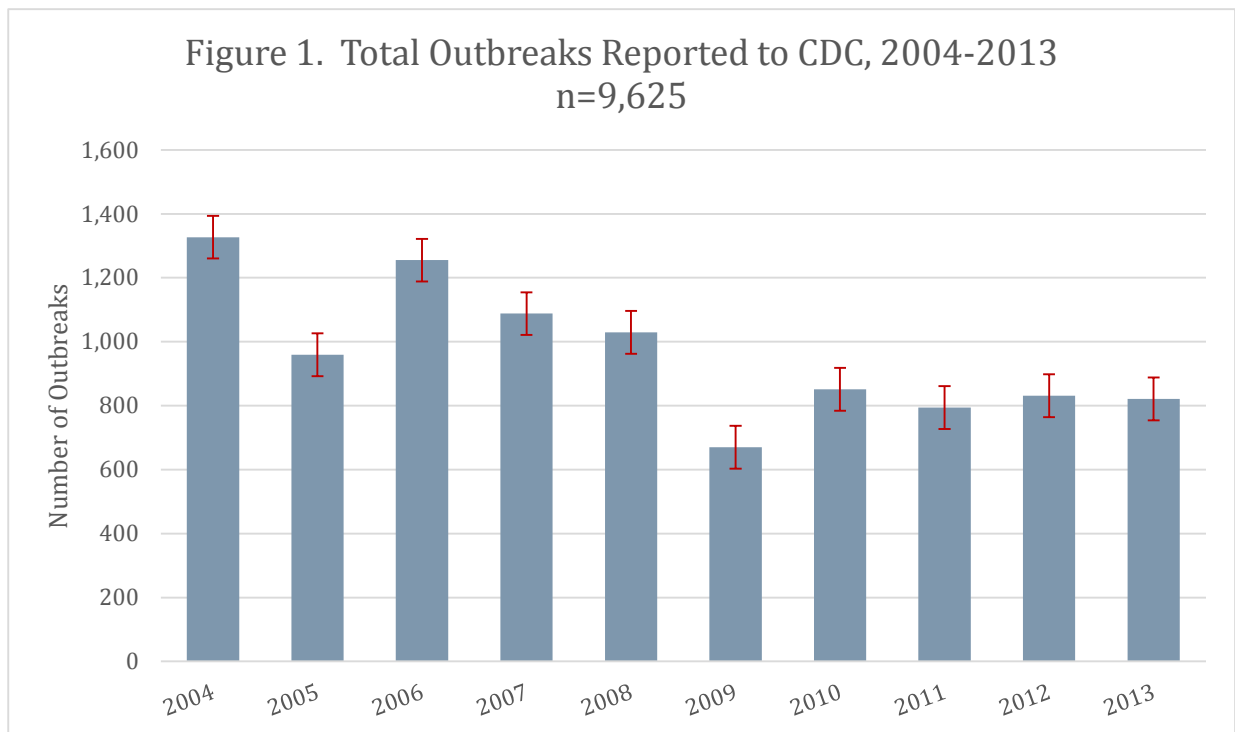
¹ Norovirus was the leading cause of illnesses sourced to produce.

Findings

FINDING I. OUTBREAK REPORTING HAS GENERALLY DECREASED OVER THE DECADE; MORE CONSISTENT REPORTING AFTER 2009

Since 2009, the average number of foodborne illness outbreaks, as reported by CDC, appears to have decreased by about a third, compared to the average of the six preceding years. In the last four years, from 2010 to 2013, the number of outbreaks CDC reported varied little from year to year (Figure 1). This consistency may be reflective of a standardized, electronic surveillance system that was implemented in 2009 (2). Consistent data collection is necessary to maintain high-quality studies which form sound food safety policy to prevent future outbreaks. The decline in reported outbreaks apparent in the data may be due in part to the emergence of rapid diagnostic tests (3). In order to efficiently treat a patient, doctors may use the tests to quickly identify a pathogen without registering its whole genome sequence or maintaining a live culture. As a result, information about foodborne illnesses that may be critical to linking cases to an outbreak is lost. Outbreak reporting suffers because epidemiologists are unable to match the strains across contaminated foods.

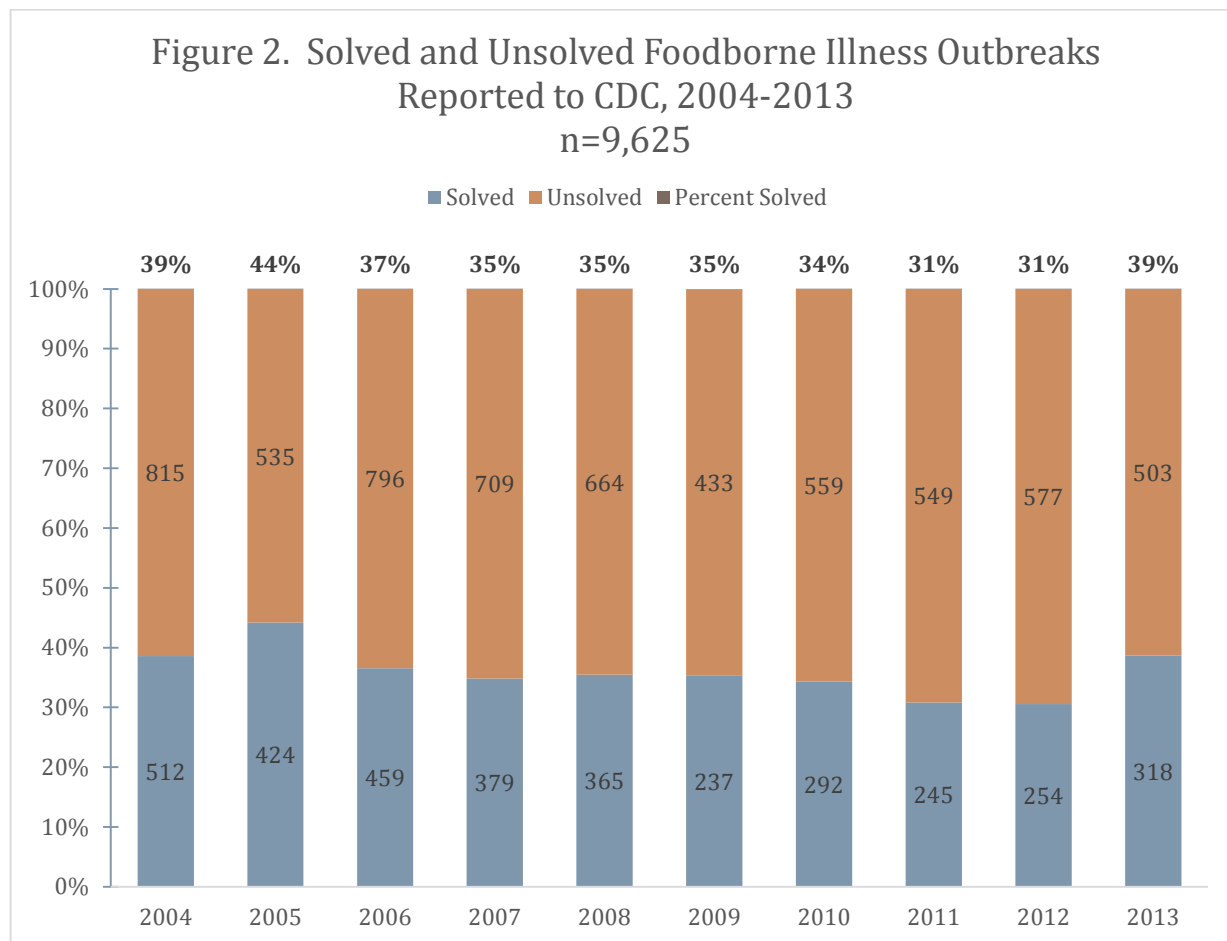
The data reported here and in Finding II encompass all outbreaks reported by CDC (Figure 1), which include those without an identified pathogen or food vehicle. Unless otherwise indicated, the remainder discuss only those outbreaks with both an identified food vehicle and contaminant.



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FINDING II. WHILE MORE THAN HALF OF OUTBREAKS REMAIN UNSOLVED, 2013 MARKS AN IMPROVEMENT IN THE NUMBER OF SOLVED OUTBREAKS

Solved outbreaks—with both an identified contaminated food and pathogen—are important to develop risk-based interventions and design the most effective food safety hazard controls. Unfortunately, the majority of outbreaks reported to and published by the CDC between the years 2004 and 2013 were only partially investigated (Figure 2). Many health departments are underfunded, understaffed, and overwhelmed by the volume of illness reports, foodborne and otherwise. An in-depth analysis of state-by-state reporting from 2003 to 2012, found in CSPI's 2015 edition of *All Over the Map: A 10-year Investigation of State Outbreak Reporting*, uncovered large differences among states' performances in foodborne-illness-outbreak reporting (4). Encouragingly, the data from 2013 shows a six-percentage-point improvement compared to the average percentage of solved outbreaks reported to CDC in the four previous years.



FINDING III. FDA-REGULATED FOODS WERE IMPLICATED IN MORE THAN TWO-THIRDS OF SOLVED OUTBREAKS

CSPI classifies the foods implicated in each solved outbreak into one of 13 consumer-focused categories and 37 sub-categories (Appendix). The classification system is designed to group foods in a way that is recognizable by consumers, as well as useful to researchers and public health professionals. Categories are further sorted by the regulatory agency responsible for each category's food safety oversight: the United States Department of Agriculture (USDA) for meat and poultry products, or the Food and Drug Administration (FDA) for produce, seafood, and many processed foods (Figure 3b). An outbreak caused by foods regulated by both the FDA and USDA is categorized as "Both."

Between 2004 and 2013, FDA-regulated foods were responsible for 69% of outbreaks, USDA-regulated foods were responsible for 24% of outbreaks, and 7% of outbreaks were caused by multi-ingredient foods regulated by both USDA and FDA (Figure 3a).

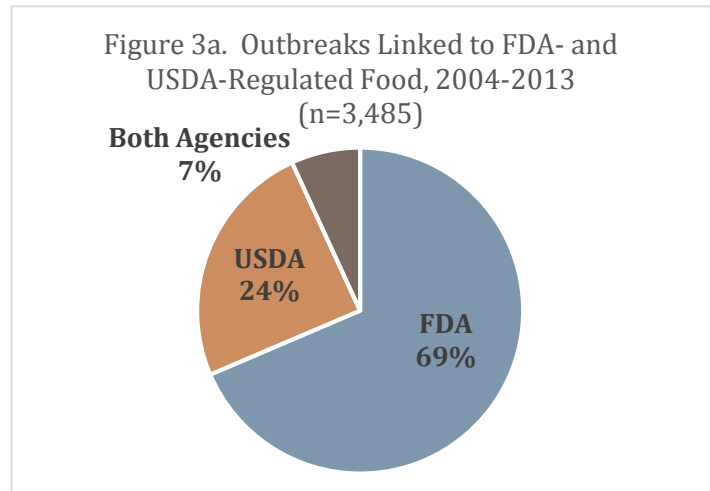
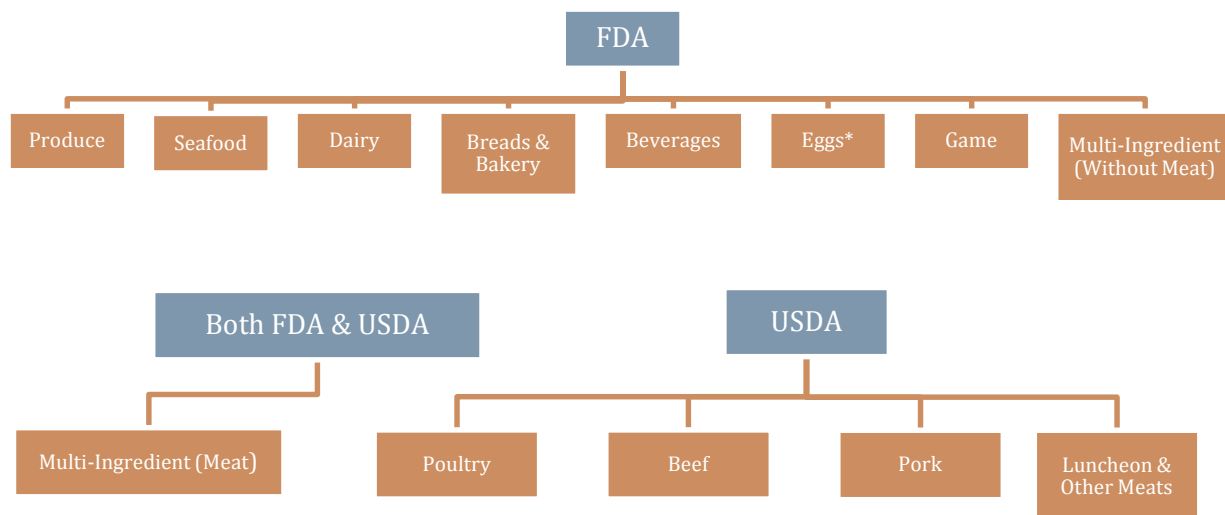


Figure 3b. CSPI Classification of 13 Consumer-Focused Food Categories by Regulatory Agency



*Shell eggs are regulated by FDA, once they are processed or out of shell they are regulated by USDA.

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FINDING IV. THE NUMBER OF SOLVED OUTBREAKS RELATED TO PRODUCE SURPASSED ALL OTHER CATEGORIES; POULTRY, BEEF, AND SEAFOOD CATEGORIES SAW SLIGHT INCREASES IN SOLVED OUTBREAKS IN THE LAST SEVERAL YEARS

The produce category was the top category for solved outbreaks, with 643 (19% of total solved outbreaks), and 20,456 illnesses (24% of total illnesses) (Figure 4). Seafood was responsible for the second-most outbreaks (541), but relatively few illnesses due to the small size of an average seafood outbreak (5,173 illnesses, about 10 illnesses per outbreak). Outbreaks associated with USDA-regulated foods include poultry (372 outbreaks and 11,580 illnesses), beef (249 outbreaks and 5,452 illnesses), and pork (153 outbreaks and 4,001 illnesses) (Figure 4).

The results also show changes in outbreak reporting in several food categories (Figure 4). The annual number of outbreaks associated with beef, produce, seafood, pork, and poultry declined across the decade, but reports in most of these categories have increased since 2009.² The number of outbreaks associated with dairy products varied widely over the decade.

Reporting was at a low point for many categories in 2009, most notably produce, seafood, poultry, and pork. A recent CDC report attributed that dip to a new reporting system in which norovirus outbreaks were less likely to be reported as foodborne after 2009 (2). Norovirus has many modes of transmission, including person-to-person. In the previous system health departments were likely to attribute norovirus cases to food if they had difficulty identifying another cause. Since norovirus is a common pathogen in many of the affected food categories, a change in how it was classified is likely to have significant effect on the numbers of outbreaks and illnesses.³ In addition, that year was the height of the recent recession and a time when many state public health agencies experienced reduced budgets (4) (5).

² In some years, the number of total illnesses due to dairy and produce can be linked to specific outbreaks. The spike in dairy-related illnesses in 2006 was due to a *Campylobacter* outbreak in pasteurized milk served in prisons that sickened 1,644 inmates. The spike in produce-related illnesses in 2008 was due to one large multi-state outbreak from contaminated jalapeño and serrano peppers that sickened over 1,500 people.

³ The number of outbreaks attributed to norovirus prior to 2009 is not adjusted in this report.

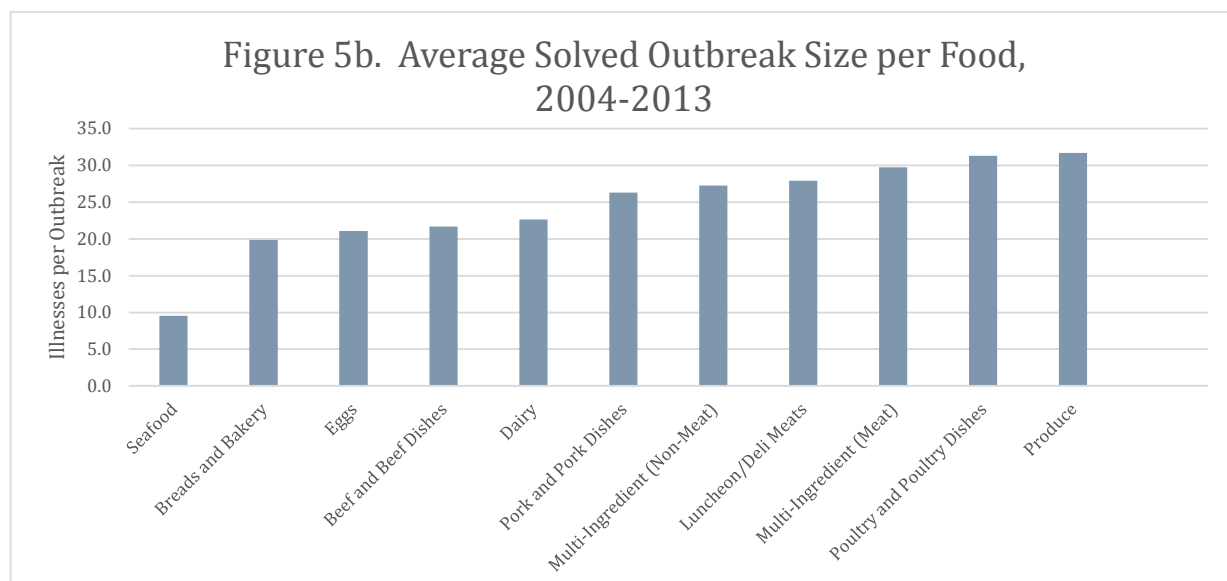
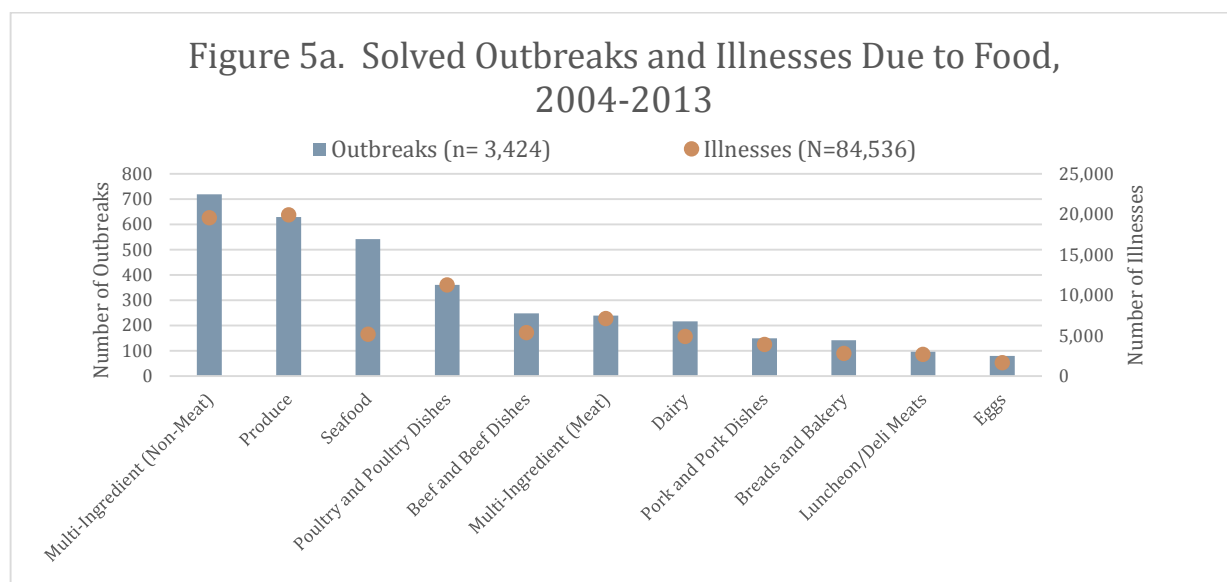
Figure 4. Solved Foodborne Illness Outbreaks by Food Category, 2004-2013



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FINDING V. PRODUCE SICKENED MORE PEOPLE THAN ANY OTHER CATEGORY

Among CSPI's food categories (other than multi-ingredients), produce was linked to the greatest number of outbreaks, followed closely by seafood. Produce was also responsible for the greatest number of illnesses, more than double that attributed to beef and beef dishes (Figure 5a). When the average sizes of outbreaks are considered, produce caused the largest average number of illnesses per outbreak, while the average size of seafood outbreaks was the smallest (Figure 5b).



SPOTLIGHT

Addressing On-farm Food Safety Concerns

In general, the larger the number of illnesses in an outbreak the greater the likelihood that the point-of-contamination occurred earlier in the distribution chain (Figure 5b). The larger outbreaks attributed to produce are often linked to a contaminant from a farm or distribution center. New research helps explain the mechanisms of pathogen transmission in agricultural settings. For instance, a recent study found that the effect of precipitation and irrigation strongly influences pathogen growth, as it was determined that the prevalence of *Listeria* can be anywhere from 7 to 25 times higher 24 hours after rainfall or irrigation (6). Produce safety standards—including adequate hygienic infrastructure for farmworkers—and good agricultural practices that FDA issued in November 2015 should help prevent on-farm contamination.

Recent outbreaks that occurred in produce (7):

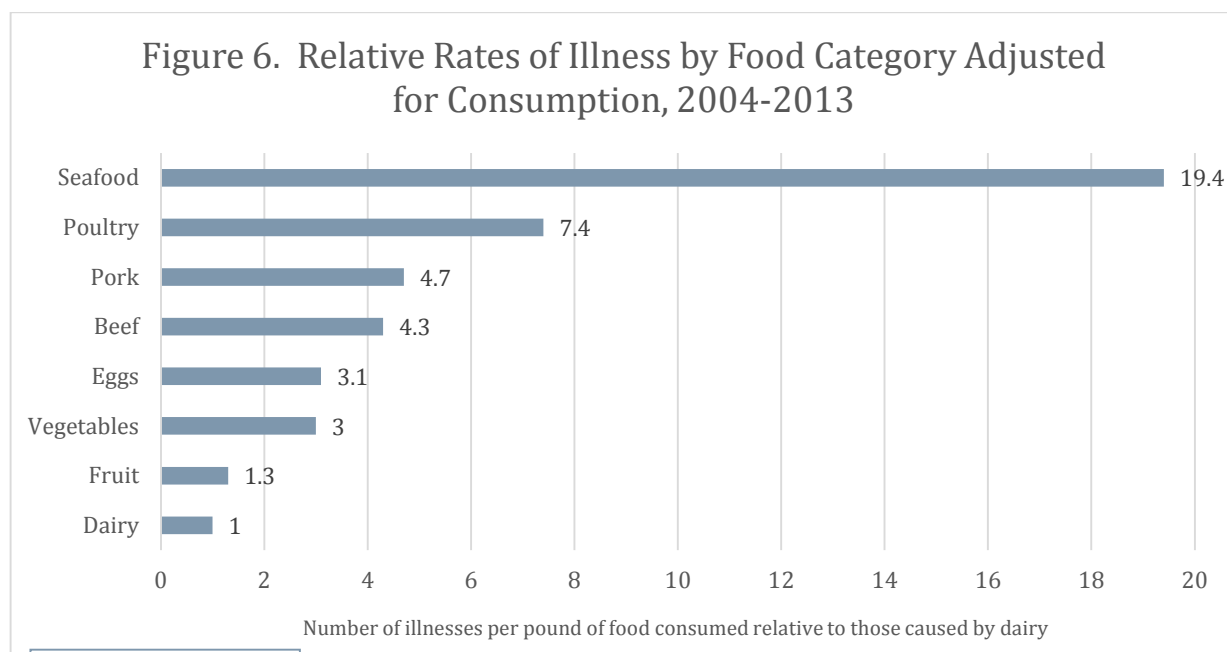
- Reoccurring outbreaks of cyclosporiasis from contaminated cilantro grown in the state of Puebla, Mexico, sickened several hundred people in 2012, 2013, 2014, and 2015 around the United States. Investigations in July 2015 found that poor hygienic conditions for farm workers were most likely the cause of those outbreaks.
- In 2014, *Salmonella* Newport⁴ was implicated in an outbreak in cucumbers that sickened 257 patients in 29 states and the District of Columbia. The exact source of the bacteria was not found, but experts think that the bacteria might have been linked to the application of manure.
- In 2012, *Salmonella* Typhimurium and *Salmonella* Newport in cantaloupes sickened 261 people in 24 states. There were 3 deaths and 94 hospitalizations. An inspection found unsanitary conditions in the farm's processing shed.
- In 2011, *Listeria*-contaminated cantaloupes sickened 147 people in 28 states and caused 33 deaths. This outbreak had the highest death-rate of any outbreak covered in this report and was the deadliest recorded outbreak since 1990. Officials have linked this outbreak to unsanitary conditions at the packing facility on the farm.
- In 2008, *Salmonella* Saintpaul contaminated jalapeño and serrano peppers and pepper products (e.g., salsa) sickened 1,442 people in 43 states in the largest multi-state outbreak in the years 2004 to 2013. Of those sickened, 286 required hospitalization, and the infection may have contributed to 2 deaths. While unclear, the exact source of this outbreak may have been caused by contaminated irrigation water from a large farm in Mexico.

⁴ Strains of *Salmonella* Newport and *Salmonella* Typhimurium are among *Salmonella* strains often found to be resistant to one or more classes of medically important antibiotics. Due to recent droughts, farms in the west and southwest—regions that provide the majority of produce in the United States—increasingly rely on treated waste-water. While a step forward for sustainability and necessary for the livelihood of many farms, the use of recycled wastewater raises the possibility of introducing antibiotic resistant bacteria in produce (20). In addition, agricultural fields are commonly fertilized with manure that comes from chicken, beef, and pork farms, most of which use medically important antibiotics in animal feed, possibly further contributing to increased antibiotic resistant pathogens in produce (21).

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FINDING VI. POUND-FOR-POUND, SEAFOOD REMAINS THE RISKIEST FOOD, WHILE PRODUCE AND DAIRY ARE AMONG THE SAFEST FOODS

Although produce is responsible for the greatest overall number of outbreaks and illnesses, pound for pound, fruit and vegetables are among the safest foods to eat. When CSPI analyzed the risk of illness per pound consumed, poultry products topped beef and pork. Seafood was by far the most hazardous food (Figure 6).



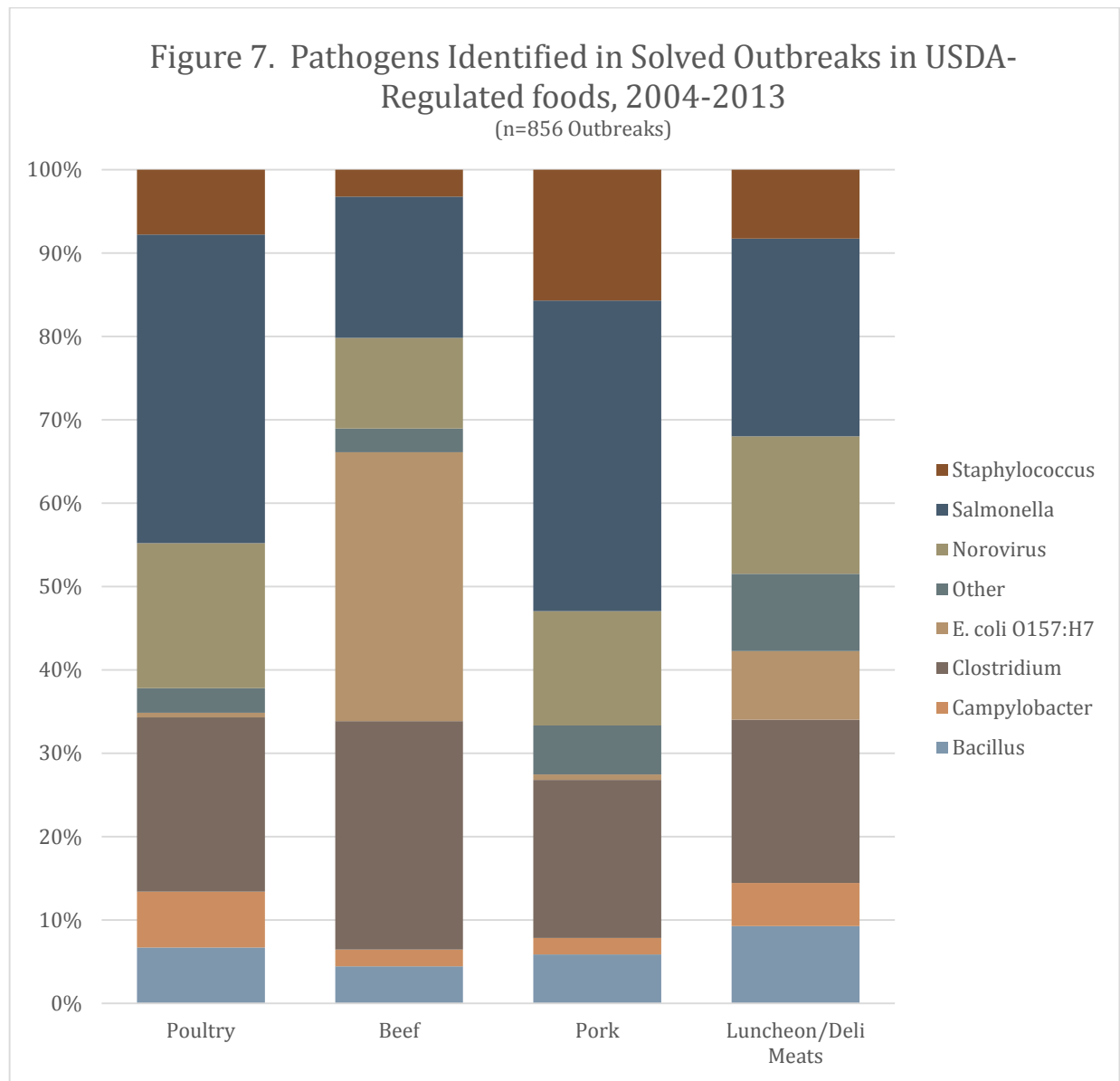
SPOTLIGHT

Addressing Consumers' Concern about Seafood

A consumer survey suggests that seafood is the category that consumers are most worried about (8). Contributing to consumer concerns, 85% of seafood is imported, and FDA, which inspects only 1.2% of those imports, has identified numerous violations, from drug residues to excessively high pathogen levels in certain products (9) (10). The most widely consumed seafood product in the U.S. is shrimp which often comes from large aquaculture farms abroad, many of which have unsanitary conditions and little oversight in the amount of antimicrobials used. In addition, a study from Oceana found that seafood fraud has become more common with an estimated one-third of seafood being mislabeled (11). Mislabeling leaves consumers in the dark about where their food comes from and what species they are consuming, which could have adverse health consequences as demonstrated in 2007 when toxic puffer fish was mislabeled as monk fish (12). FDA needs to adequately sample imported seafood for both contaminants and fraud.

FINDING VII. THE MOST COMMON CONTAMINANTS IN USDA-REGULATED FOODS

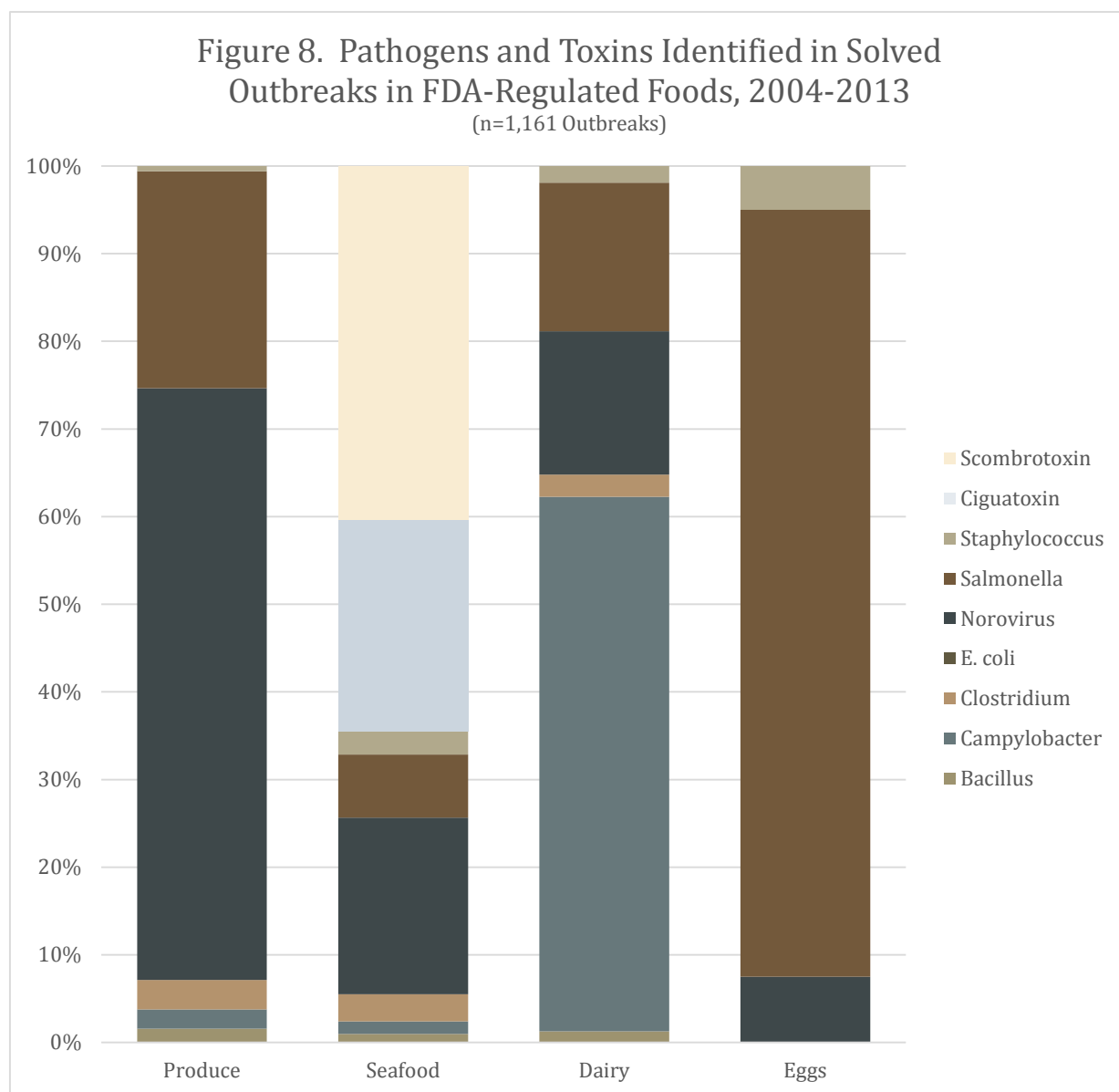
Among USDA-regulated products, *Salmonella* species (spp.) were most common in pork and poultry products, and *E. coli* O157:H7 in beef. *Staphylococcus aureus* was more often associated with pork than other categories of products. Norovirus and *C. perfringens* were evenly distributed across food categories (Figure 7a).



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FINDING VIII. THE MOST COMMON CONTAMINANTS IN FDA-REGULATED FOODS

The most commonly identified causes of foodborne illness outbreaks in FDA-regulated foods were Norovirus and *Salmonella* spp. in produce; scombrototoxin and ciguatoxin in seafood; *Campylobacter* in dairy; and *Salmonella* spp. in eggs (Figure 7b).



SPOTLIGHT

Impact of Climate Change on the Variety and Frequency of Foodborne Safety Hazards

Climate change has a tremendous effect on the variety and frequency of food safety hazards in multiple food production settings, on both land and sea. Along the east coast, rising sea temperatures have resulted in an increased prevalence of several *Vibrio* species that contaminate shellfish and fish (13). Another example is ciguatoxin, a toxin produced by algae growing in warmer waters, which is concentrated up the food chain in barracuda and other predatory tropical fish. Ciguatoxin can result in death or long-term harm to muscles, nerves, and cardiac cells in people. As global ocean temperatures rise due to climate change, the risk and range of ciguatoxin contamination may increase (14).

On land, foodborne parasites, viruses, or fungi endemic to tropical regions (i.e., *Cyclospora*, zoonotic viruses, or aflatoxin) may increasingly affect U.S. consumers in unexpected ways. Previously arid regions have had higher rainfalls than usual, bringing new challenges for controlling runoff in agricultural settings. With weather affecting migratory behaviors of animals, zoonotic viruses could infect large herds, or jump from certain animal species directly to humans (15).

Those dynamic threats highlight the need to continuously reassess good agricultural and veterinary practices and revise food safety plans accordingly. In addition, CDC should review foodborne disease surveillance systems to adequately monitor emerging pathogens and contaminants on marine and land environments.

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FINDING IX. ALMOST TWO-THIRDS OF ALL SOLVED OUTBREAKS WERE REPORTED FROM RESTAURANTS AND PRIVATE HOMES

CSPI analyzed the locations where outbreak-associated contaminated foods were eaten. Not all outbreaks analyzed for this report had location information, but among those that did, more than 60% were caused by foods eaten at restaurants and foods eaten at home, even though those outbreaks caused the smallest average number of illnesses. Outbreaks with the largest average number of illnesses occurred in group settings, such as prisons, catered events, schools, elderly care centers, and religious organization-sponsored meals (Table 1).

Table 1: Outbreaks and Illnesses by Location

LOCATION	OUTBREAKS	ILLNESSES	AVERAGE OUTBREAK SIZE
Restaurant	1,283	21,335	17
Private Home	842	12,964	15
Multiple Locations/Unknown	280	9,645	34
Workplace	266	6,761	25
Banquet Hall/Catered Event	237	9,405	40
Religious/Social Club	119	4,635	39
School	116	4,353	38
Camping/Picnic/Farm	109	3,698	34
Other	89	3,452	39
Prison or Jail	57	6,370	112

SPOTLIGHT

Alerting Consumers to Recalled Products

Nearly a quarter of reported outbreaks occurred in private homes. (The actual number of illnesses occurring in private homes is likely higher.) Better recall notification could help reduce the number of in-home illnesses. Currently FDA and USDA post information about recalls on their websites and rely on the news media to disseminate warnings to consumers, but few consumers see such recall notices. One study found only 15% of consumers visit government websites for recall information and only 6% sign up with USDA and FDA for email alerts (16). If the recall doesn't make the evening news a consumer may eat food that should have been discarded. Grocery store notices offer a better way to reach consumers with recall information. Some stores already notify their customers both directly (by phone, text, or email) and with in-store notices when a recall occurs. The Food Safety Modernization Act sets specific guidelines for how grocery stores should notify customers of a recalled product. Communication strategies that target consumers can help ensure that consumers locate and remove contaminated products from their homes before people get sick.

Recommendations

Analysis must lead to action! The data collected and analyzed in this report points to certain actions that should be taken to improve our food safety system so that it better protects the public from preventable foodborne illnesses. Improvements in surveillance systems that are leading to more consistent reporting are being undermined by developments in disease diagnosis and inconsistent reporting by state public health departments due to funding shortfalls. As a result, outbreaks that could alert health officials to safety failures in the food chain and generate recalls of contaminated products to protect public health are missed. For those outbreaks that do get reported, less than 40% are solved for both the food source and the cause. When the source or cause are unknown, that can impair the ability of regulators to investigate and farmers and food companies to fix problems at the source of the outbreak. Also, consumers cannot be warned and so illnesses continue until the outbreak resolves itself.

Congress directed the CDC and FDA to improve foodborne illness surveillance and response as part of the Food Safety Modernization Act that became law in 2011. The agencies have been slow to implement many of the changes called for in that law. In fairness to the agencies, though, Congress has not funded the tasks it mandated in passing the new law, leaving the agencies to struggle and triage actions.

Our findings suggest the following recommendations:

- The CDC should continue working with state and local health departments to standardize and maintain the consistent reporting rates seen since 2010, while also addressing the disparities in reporting rates among different states.
- Congress should fully fund programs to integrate the foodborne illness surveillance system it directed the CDC to establish in the Food Safety Modernization Act. The funding should be adequate to provide money for food safety capacity building grants to help states enhance their public health surveillance systems.
- Congress must fund FDA's implementation of the recently published rule on Produce Safety Standards. Funding should include money for support grants to the states and for outreach programs to educate state regulators and farm operators on Good Agricultural Practices.
- FDA should immediately implement provisions in the Food Safety Modernization Act that require grocery stores to post recall notices or directly contact customers who have purchased recalled foods.
- As climate change adds new threats, CDC's foodborne disease surveillance systems should be modified to include any emerging pathogens that accompany a changing environment.

Methodology

CSPI maintains a database of foodborne illness outbreaks that occurred from 1990 through 2013. The database includes 8,032 solved outbreaks responsible for 224,231 cases of illness. The database is compiled largely from the CDC's Foodborne Outbreak Online Database (FOOD), which CDC first made publicly available in 2001. FOOD currently provides CDC's outbreak data from 1998 to 2013 to the public. Prior to FOOD's launch in 2001, CSPI obtained CDC outbreak data through Freedom of Information Act requests and supplemented its database with data from state health department reports, CDC's Foodborne Outbreak Response and Surveillance Unit reports, and peer-reviewed journal articles. Today, data from non-CDC sources constitute less than 1% of the total CSPI database and none of the data analyzed for this report. For this report, CSPI analyzed the most recent 10 years of solved outbreak data: 3,485 outbreaks and 86,121 illnesses that occurred between 2004 and 2013.

CSPI categorizes outbreaks by the contaminated food or ingredient and by the federal agency responsible for regulatory oversight of that food. Outbreaks attributed to meats and poultry products are assigned to the USDA, while outbreaks attributed to produce, eggs, seafood, and meat-free multi-ingredient dishes are assigned to the FDA. CSPI uses a "Both" category for outbreaks attributed to meat-containing multi-ingredient dishes, or other situations where an outbreak was linked to multiple foods under the jurisdiction of both the USDA and FDA. CSPI's categorization approach is designed to be easily utilized by both consumers and regulatory agencies and has been used by the Food Safety Research Consortium and University of Florida's Emerging Pathogens Institute (17).

DATA COLLECTION

CDC's Foodborne Outbreak Online Database (FOOD) is the product of a large and dynamic network of nationwide outbreak surveillance systems. State agencies can modify their past outbreak reports at any time as new information becomes available, even years after an outbreak has occurred. Because of this, previously published CDC data are subject to change. This report includes one year (2013) of new data and numerous updated outbreak reports from past years. The data used in this report was downloaded from FOOD on June 16, 2015.

ANALYSIS

Solved outbreaks only are included in the CSPI database. These are ones that meet CDC's definition of an outbreak and have an identified pathogen and contaminated food. Outbreak reports that meet CSPI's inclusion criteria are further evaluated to determine whether they represent new outbreaks or updates to previously published outbreaks. The CSPI database excludes sporadic cases of foodborne illness (individual illnesses not linked to an outbreak), outbreaks with no identified pathogen, outbreaks with no identified contaminated food, and outbreaks linked to water or ice. Relative rates of foodborne illnesses were calculated using loss-adjusted per-capita consumption data from the USDA Economic Research Service for each food group (18) and population data from the U.S. Census Bureau (19).

Appendix

SOLVED FOODBORNE OUTBREAKS AND ILLNESSES BY FOOD CATEGORIES, 2004-2013

FDA-Regulated Foods		
Category	Outbreaks	Illnesses
Produce	629	19,932
Fruits	110	4,249
Vegetables	245	9,238
Produce Dishes	274	6,445
Seafood	542	5,175
Finfish	308	2,367
Molluscan Shellfish	118	1,596
Seafood Dishes	81	728
Other Seafood	35	484
Dairy	217	4,916
Cheese	56	969
Ice Cream	25	398
Milk	123	3,351
Other Dairy	13	198
Breads & Bakery	142	2,822
Bakery	119	2,457
Breads	23	365
Eggs	80	1,684
Eggs	30	585
Egg Dishes	50	1,099
Beverages	48	1,480
Juices	20	748
Other Beverages	28	732
Game	13	105
Multi-Ingredient	719	19,576
Salads	136	4,642
Sandwiches	102	2,206
Sauces/Dressings/Oils	35	891
Rice/Beans/Stuffing/ Pasta Dishes	148	2,720
Ethnic Foods	160	3,900
Nuts/Dried Spices	15	2,097
Other Foods	123	3,120

FDA Total	2,390	55,690
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USDA-Regulated Foods		
Category	Outbreaks	Illnesses
Poultry	361	11,298
Chicken	164	5,249
Turkey	66	2,430
Poultry Dishes	125	3,543
Other Poultry	6	76
Beef	248	5,377
Ground Beef	96	1,643
Beef Dishes	53	1,484
Other Beef	99	2,250
Pork	150	3,943
Ham	17	252
Pork Dishes	24	744
Other Pork	109	2,947
Luncheon/Other Meats	97	2,704
Luncheon	20	569
Meat Dishes	15	488
Other Meats	62	1,647

USDA Total	856	23,322
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Both (FDA & USDA)		
Category	Outbreaks	Illnesses
Multi-Ingredient (Meat)	239	7,109

Percent of Total Outbreaks	
Both	7%
FDA	69%
USDA	25%
Totals don't add to 100% due to rounding	

Total Outbreaks	3,485
Total Illnesses	86,121

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