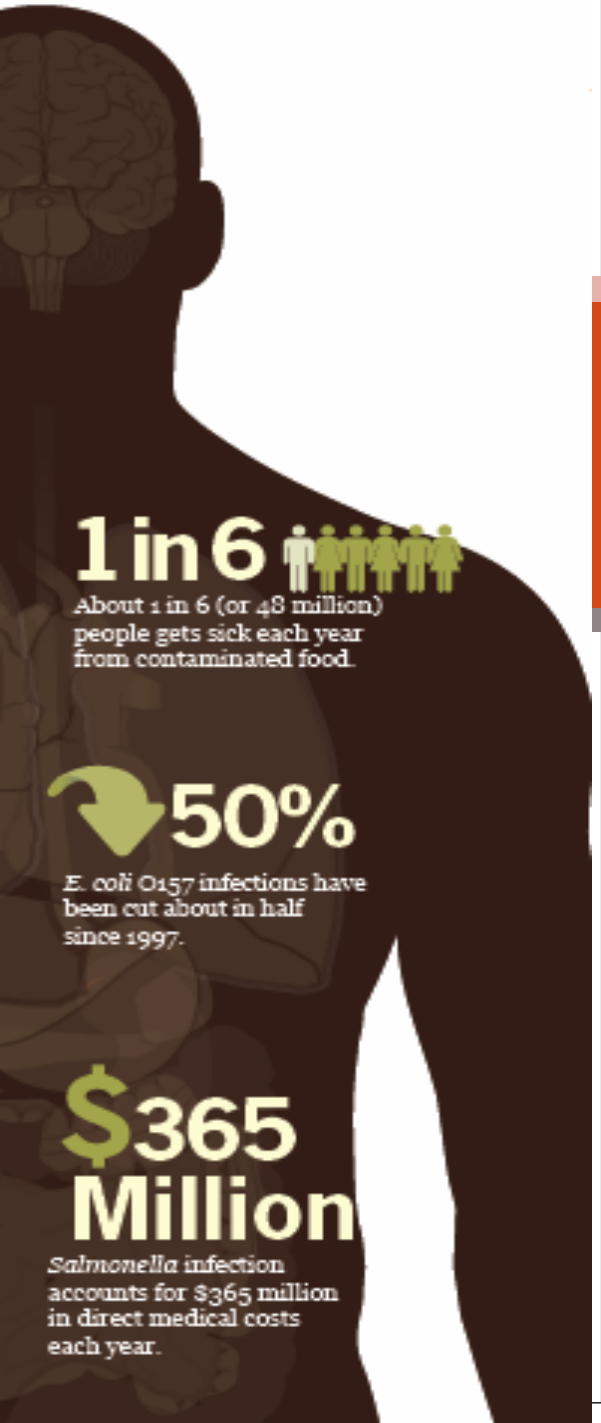

Foodborne Illness Estimates and Trends: 2011

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New CDC 2011 Estimates

- Last estimates are from 1999
- 2011 estimates use better data sources and methods
  - Five key improvements in the 2011 estimates:
    - Increased (larger) sample size used to estimate acute gastroenteritis
    - Focused on illnesses in the U.S. (domestically acquired)
    - Improved data on the fraction of norovirus that is foodborne
    - Developed specific multipliers for the 31 known pathogens
    - Accounted for uncertainty
- Estimates helpful for allocating resources and prioritizing interventions

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Estimates for two major groups

- ***1*) Known major foodborne pathogens**
  - 31 pathogens known to cause foodborne illness
- ***2*) Unspecified agents**
  - Agents with insufficient data to estimate agent-specific burden; agents not yet identified
- To estimate the total number of foodborne illness, CDC estimated the number of illness caused by both known and unspecified agents.

- **1 in 6 Americans (or 48 million people) gets sick each year from contaminated food**

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Table 1. Estimated annual number of domestically acquired foodborne illnesses, hospitalizations, and deaths due to 31 pathogens and unspecified agents transmitted through food, United States

Foodborne agents	Estimated annual number of **illnesses** (90% credible interval)	%	Estimated annual number of **hospitalizations** (90% credible interval)	%	Estimated annual number of **deaths** (90% credible interval)	%
31 known pathogens	9.4 million (6.6–12.7 million)	20	55,961 (39,534–75,741)	44	1,351 (712–2,268)	44
Unspecified agents	38.4 million (19.8–61.2 million)	80	71,878 (9,924–157,340)	56	1,686 (369–3,338)	56
Total	47.8 million (28.7–71.1 million)	100	127,839 (62,529–215,562)	100	3,037 (1,492–4,983)	100

Pathogens causing the most illnesses

- Eight known pathogens account for the vast majority of illnesses, hospitalizations and deaths

Table 2. Top five pathogens causing domestically acquired foodborne illnesses

Pathogen	Estimated annual number of illnesses	90% Credible Interval	%
Norovirus	5,461,731	3,227,078–8,309,480	58
Salmonella, nontyphoidal	1,027,561	644,786–1,679,667	11
Clostridium perfringens	965,958	192,316–2,483,309	10
Campylobacter spp.	845,024	337,031–1,611,083	9
Staphylococcus aureus	241,148	72,341–529,417	3
Subtotal			91

Table 3. Top five pathogens causing domestically acquired foodborne illnesses resulting in hospitalization

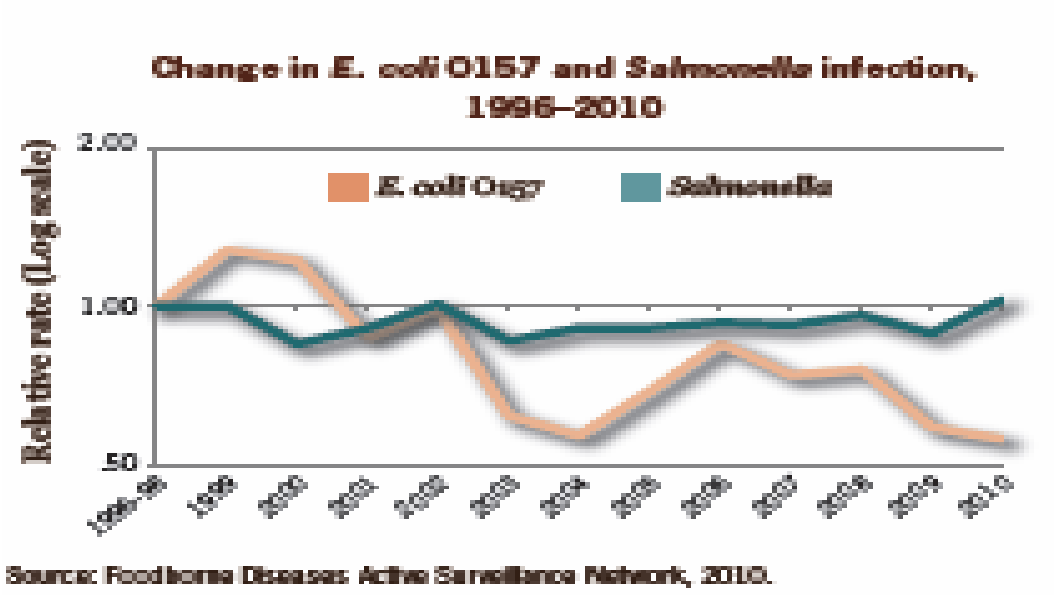
Pathogen	Estimated annual number of hospitalizations	90% Credible Interval	%
Salmonella, nontyphoidal	19,336	8,545–37,490	35
Norovirus	14,663	8,097–23,323	26
Campylobacter spp.	8,463	4,300–15,227	15
Toxoplasma gondii	4,428	3,060–7,146	8
E. coli (STEC) O157	2,138	549–4,614	4
Subtotal			88

Table 4. Top five pathogens causing domestically acquired foodborne illnesses resulting in death

Pathogen	Estimated annual number of deaths	90% Credible Interval	%
Salmonella, nontyphoidal	378	0–1,011	28
Toxoplasma gondii	327	200–482	24
Listeria monocytogenes	255	0–733	19
Norovirus	149	84–237	11
Campylobacter spp.	76	0–332	6
Subtotal			88

Trends in Foodborne Illness

- Important to measure changes in annual incidence of common foodborne infections:
  - Can track progress toward national health objectives
  - Inform regulatory and industry efforts to reduce food contamination
  - Monitor effectiveness of prevention measures



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Highlights of the past 15 years:

- Infections caused by *E. coli* O157:H7 has declined significantly
- Overall incidence for five of the key pathogens showed important declines from 2010 compared to 1996-1998

Pathogen	Decrease
Shigella	57%
Yersinia	52%
E. Coli O157	44%
Listeria	38%
Campylobacter	27%

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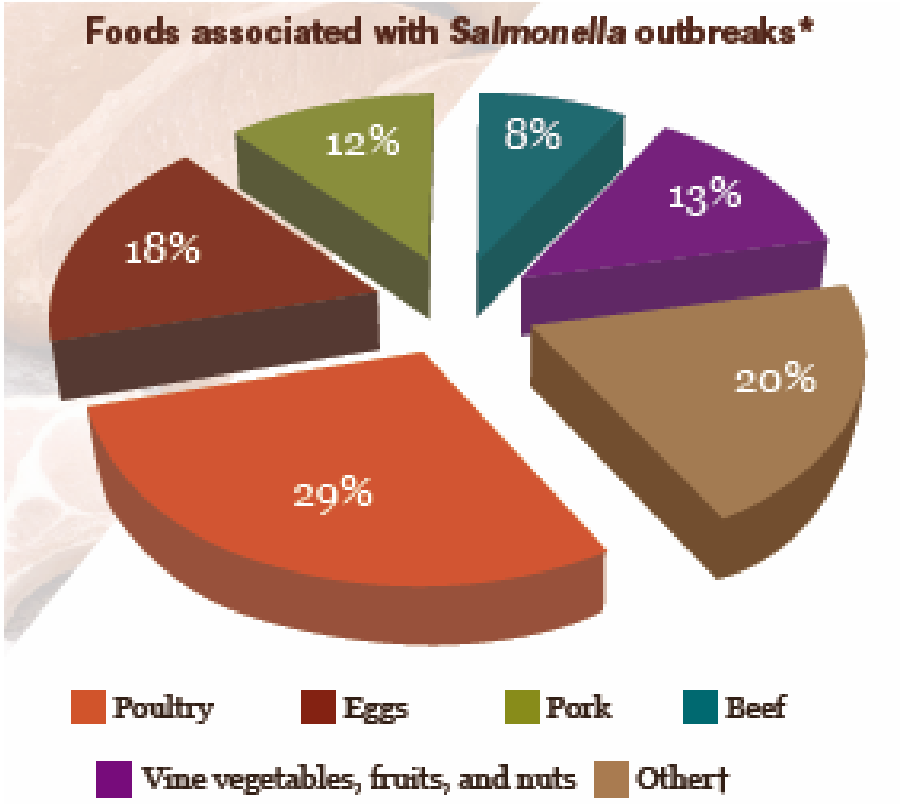
Highlights Continued:

- ***Salmonella* infection has not declined in 15 years**
  - *Salmonella* was the most common infection (**1.2 million illnesses annually**) and most common cause of hospitalization and death
    - Infections actually increased since 2006-2009
    - Accounts for **$365 million** in direct medical costs each year
  - *Salmonella* can contaminate a wide range of foods and tends to have different animal reservoirs and food sources, making control difficult
  - Contamination can occur anywhere – from fields to cutting boards
  - What we eat and how we eat have changed



*These contaminated ingredients or single foods (belonging to one food category) were associated with 1/3 of the *Salmonella* outbreaks.

†Other includes: Sprouts, leafy greens, roots, fish, grains-beans, shellfish, oil-sugar, and dairy.

Source: CDC National Outbreak Reporting System, 2004–2008.

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Highlights Continued:

- Incidence was higher for *Vibrio* infection (115% increase)
  - Infections are rare, but often serious, and are caused by eating contaminated seafood or exposing open wounds to seawater.
  - Continued *Vibrio* illnesses highlight lack of implementation of available control measures

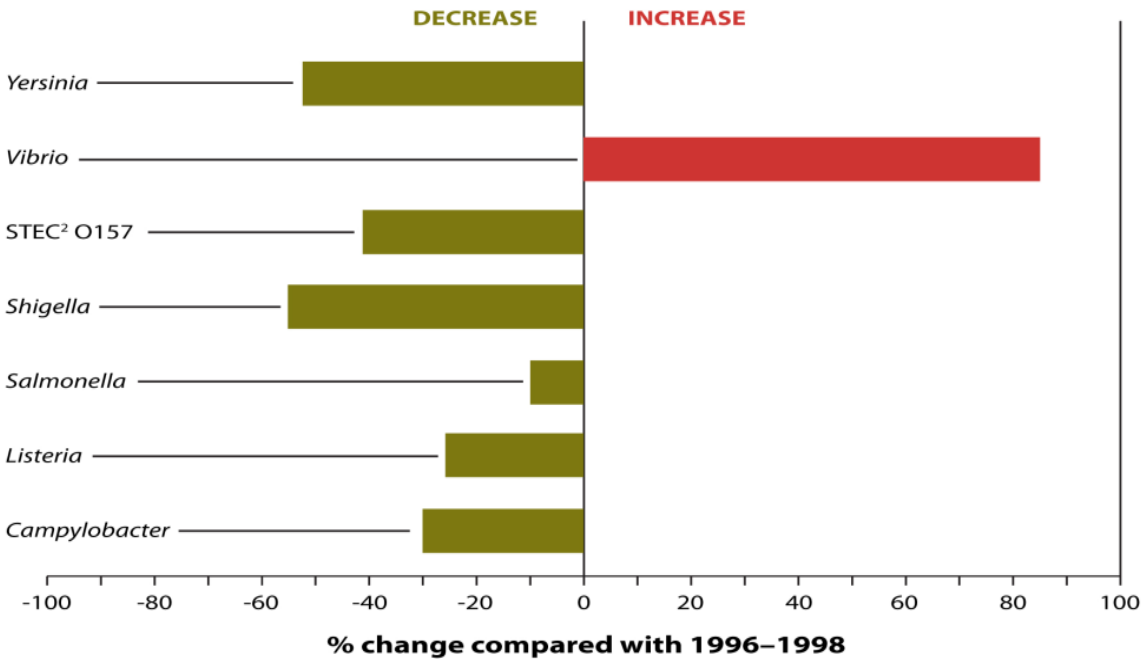
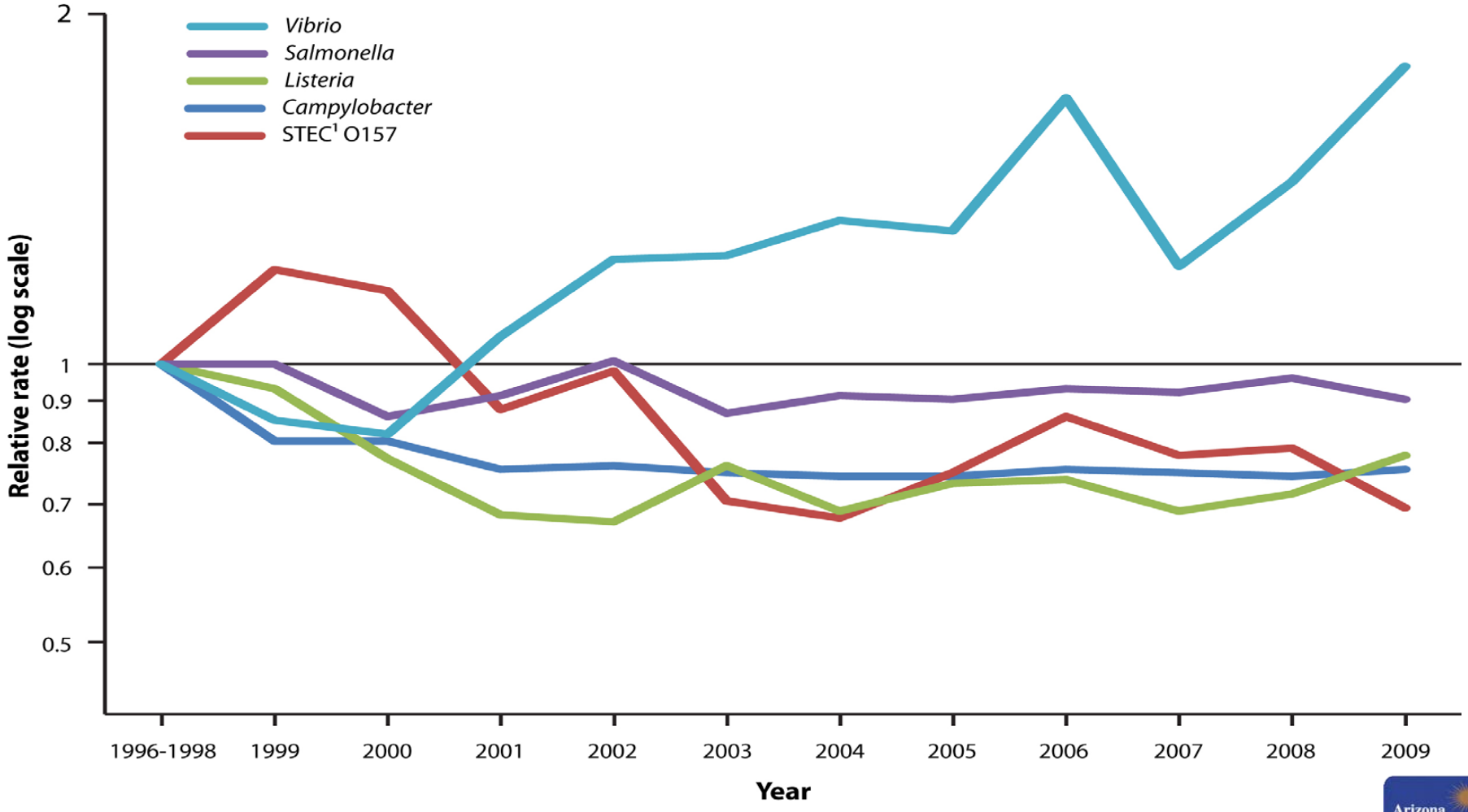


Figure 1. Relative rates of laboratory-confirmed infections with *Campylobacter*, STEC1 O157, *Listeria*, *Salmonella*, and *Vibrio* compared with 1996–1998 rates, by year — Foodborne Active Surveillance Network, United States, 1996–2009



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Highlights Continued:

- Overall - Downward trend in foodborne infections. Due in part to:
  - Enhanced knowledge about preventing contamination
  - PulseNet has greatly improved detection and investigation of multistate outbreaks
  - Cleaner slaughter methods, microbial testing, and better inspections in ground beef processing plants
  - Regulatory agency prohibition of contamination of ground beef with *E. coli* O157
  - Improvements in the FDA model Food Code
  - Increased awareness in food service establishments and consumers' homes of the risk of consumption of undercooked ground beef

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Summary

- Foodborne infections can be prevented
- However: reducing the number of infections will require strong action to prevent food contamination at multiple steps – from the farm to the table
- Target 2020:
  - Reduce *Salmonella* infections by 25%
  - 25%-50% reduction for five other infections and HUS
- **Reducing foodborne illness by 10% would keep about 5 million Americans from getting sick each year**

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For More Information:

- Foodborne Illness – Major Pathogens Article
  - http://www.cdc.gov/EID/content/17/1/pdfs/09-1101p1.pdf
- Foodborne Illness – Unspecified Agents Article
  - http://www.cdc.gov/EID/content/17/1/pdfs/09-1101p2.pdf
- MMWR: Incidence and Trends with Pathogens Transmitted Commonly Through Food
  - http://www.cdc.gov/mmwr/preview/mmwrhtml/mm60e0607a1.htm?s_cid=mm60e0607a1_w
- CDC website:
  - http://www.cdc.gov/foodborneburden/resources.html

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Any Questions?