Conference for Food Protection
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Promoting Food Safety Through Collaboration

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Disclaimer

Some of the findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention

Why are we working so hard?
Some hypotheses

1. **Food supply is safe <u>BECAUSE</u> you are working hard.**

2. **Burden of illness: Lots of diarrhea around.**

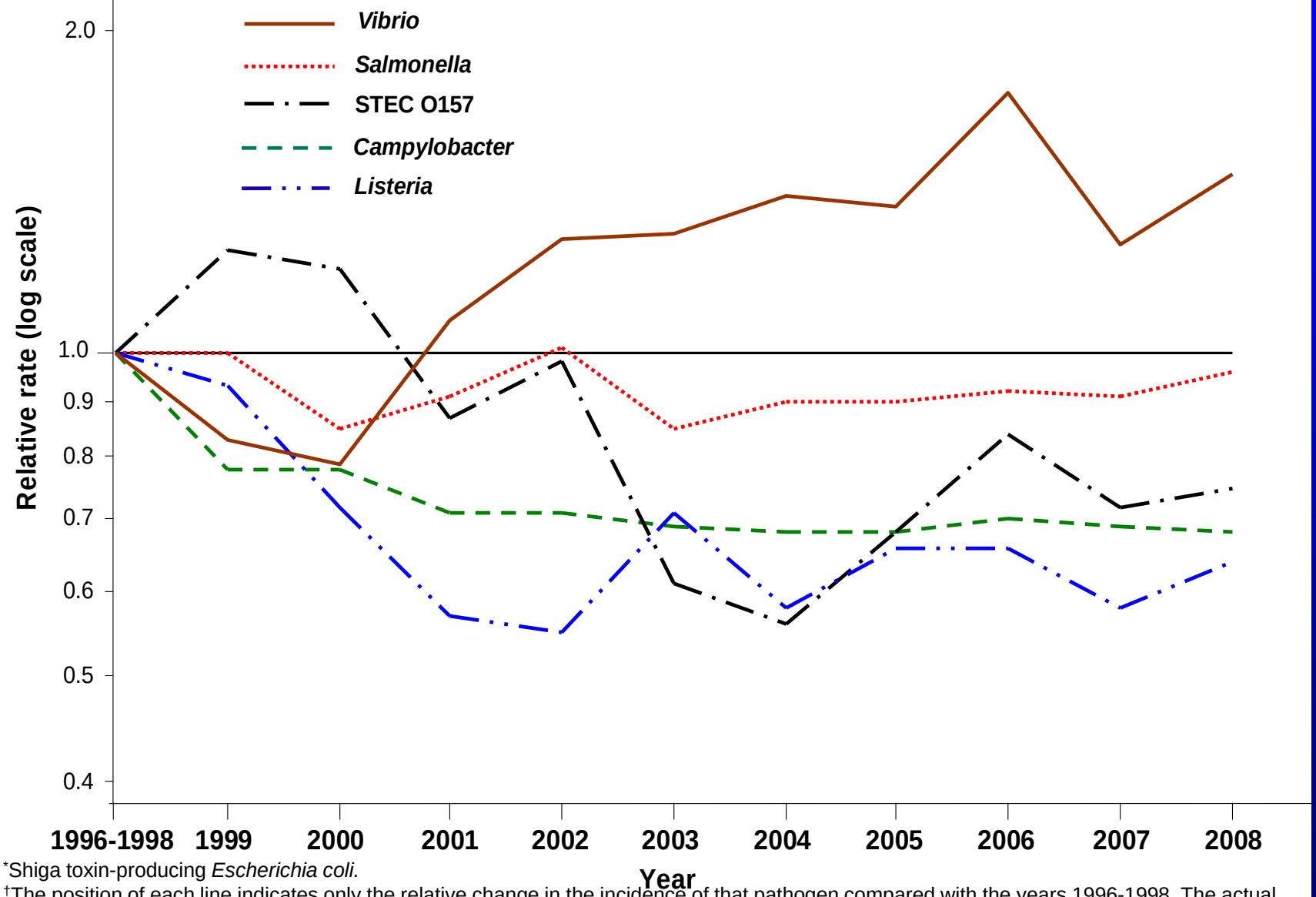
3. **“Find a needle in a haystack”:**

   ↑ surveillance;
   ↑ information technology;
   ↑ lab technology;

4. **“New” problems; harder to solve.**

5. **Other – e.g. Workforce eroding**

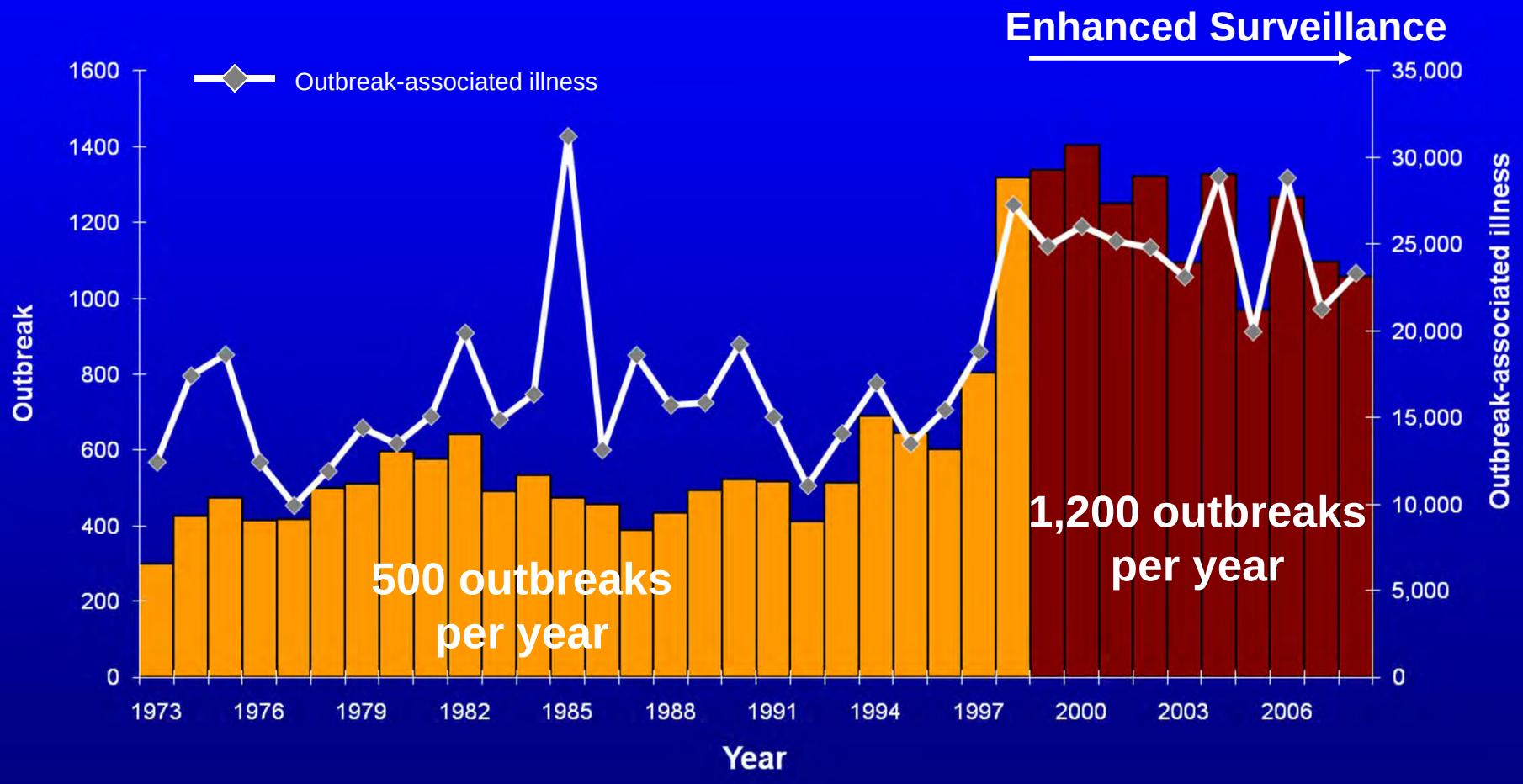
FIGURE. Relative rates compared with 1996-1998 period of laboratory-diagnosed cases of infection with *Vibrio*, *Salmonella*, STEC* O157, *Campylobacter,* and *Listeria* by year – Foodborne Active Surveillance Network, United States, 1996-2008†



*Shiga toxin-producing *Escherichia coli.*

†The position of each line indicates only the relative change in the incidence of that pathogen compared with the years 1996-1998. The actual incidences of these infections can differ.

Foodborne Disease Outbreaks Reported per Year, 1973–2008



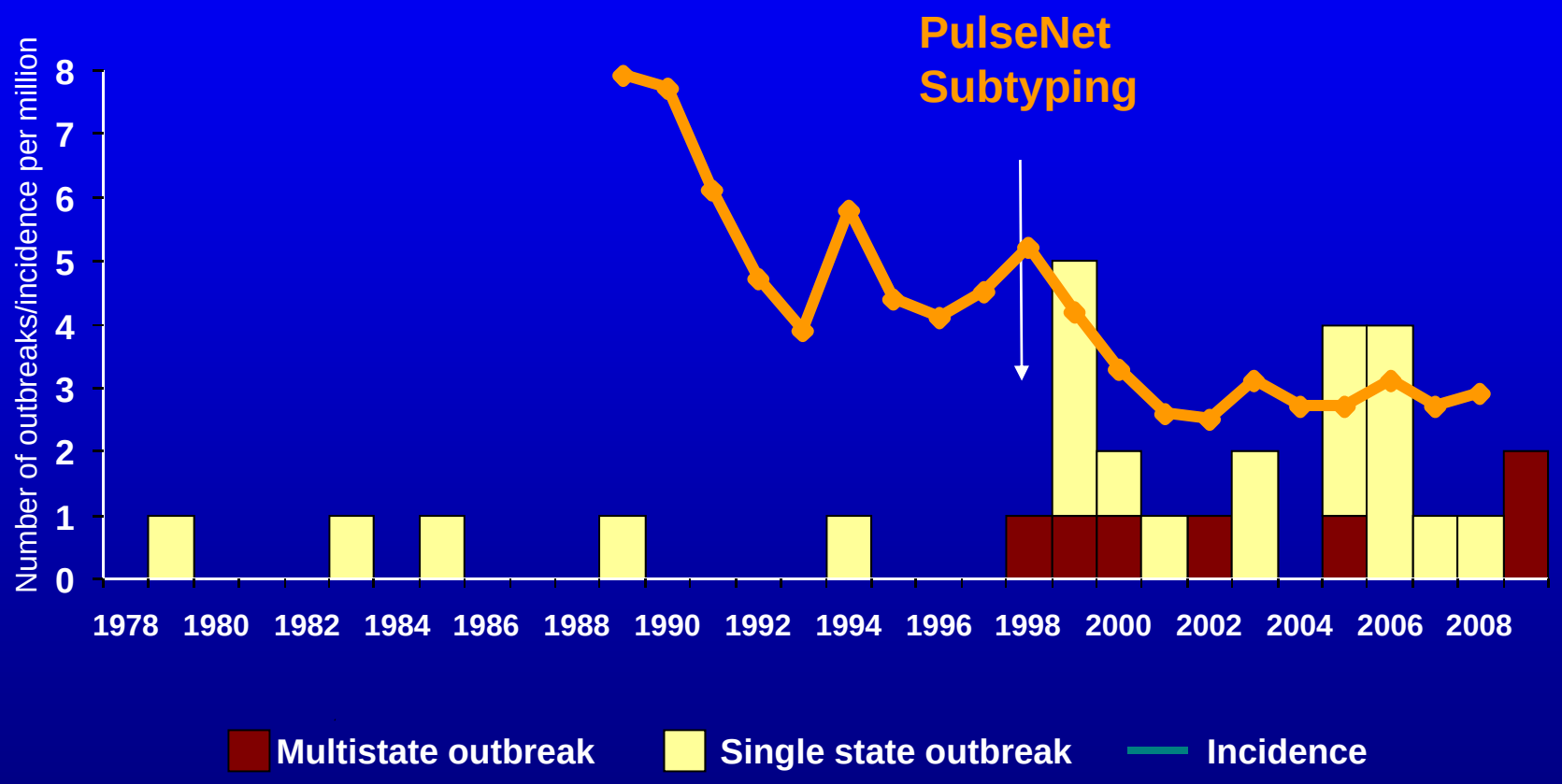
Some Large U.S. Food Recalls

Year	Pathogen	Food	Amount recalled
2010	*Salmonella* Montevideo	Ready-to-eat Italian Sausage Products	>1,263,754 lbs
2009	*E. coli* O157:H7	Non-intact steak and ground beef outbreaks	1,115,049 lbs
2009	*E. coli* O157:H7	Cookie dough	300,000 cases of product
2009	*S.* Typhimurium	Peanut butter/peanut products	>3000 types of products
2008	*E. coli* O157:H7	Ground beef	5,300,000 lbs
2007	*E. coli* O157:H7	Frozen pizza	5,000,000 pizzas
2007	*E. coli* O157:H7	Ground beef (3 outbreaks)	35,400,000 lbs
2006	*Salmonella* Tennessee	Peanut butter	326,000,000 lbs
2004	*Salmonella* Enteritidis	Raw almonds	13,000,000 lbs
2003	*E. coli* O157:H7	Blade Tenderized Frozen Steak	750,000 lbs
2002	*Listeria monocytogenes*	Ready-to-eat poultry products	27,400,000 lbs
2002	*E. coli* O157:H7	Ground beef	18,600,000 lbs
2000	*Listeria monocytogenes*	Ready-to-eat poultry products	16,900,000 lbs
2000	*E. coli* O157:H7	Ground beef	1,100,000 lbs
1998	*Listeria monocytogenes*	Hot dogs, deli meats	35,000,000 lbs
1998	*Salmonella* Agona	Toasted oats cereal	3,000,000 lbs
1997	*E. coli* O157:H7	Frozen ground beef	25,000,000 lbs

Courtesy J. Besser

Find a needle in a haystack

Outbreaks & Incidence of Reported Cases of Listeriosis, 1978-2008, USA



Incidence data from active surveillance systems (FoodNet since 1996)
Outbreaks of confirmed *Listeria monocytogenes* reported to CDC (eFORS)

Challenge: A Broad Range of Foods Can Be Contaminated

10 new food vehicles identified in multistate outbreaks since 2006:

- **bagged spinach**
- **carrot juice**
- **peanut butter**
- **broccoli powder on a snack food**
- **dog food**
- **pot pies**
- **canned chili sauce**
- **hot peppers**
- **white pepper**
- **raw cookie dough**

Today's problems are harder to solve.

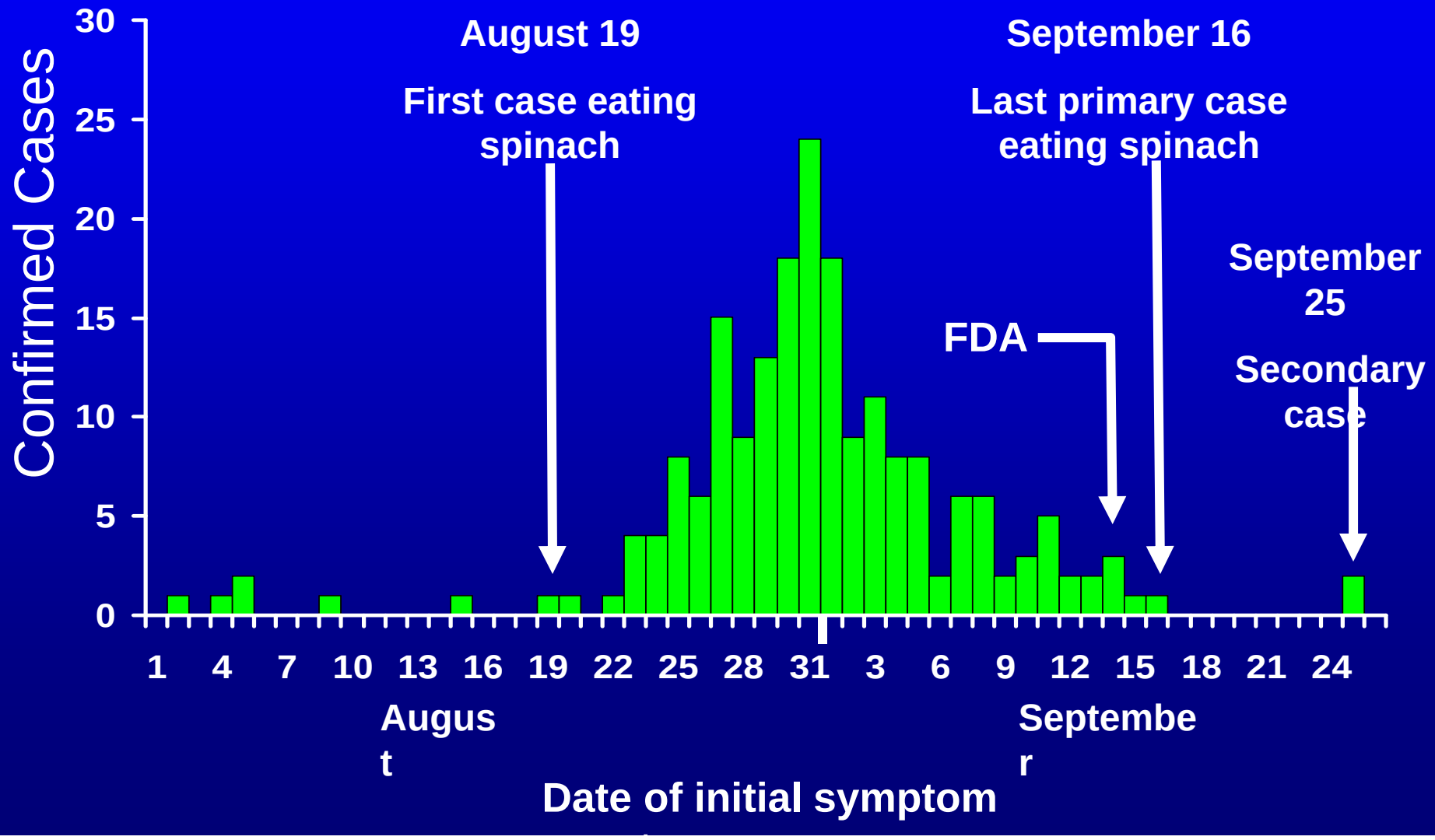
E.g. Norovirus

- Reservoir → human feces
- Symptoms: nausea, vomit, diarrhea, muscle aches, headache, fever
- Highly infectious -- just a few viruses needed (10-100);
- Transmission: foodborne, waterborne, p2p contact, possibly airborne
- Virus shedding = at least 2-3wks; 32% asymptomatic
- Hardy virus survives freezing, temp ≤ 140°F, exposure on environmental surfaces
- Antigenic shifting; no durable immunity
- No vaccine; no culture system

Today's problems are harder to solve.
E.g. leafy greens

of Cases by Date of Illness Onset

United States, August – September, 2006



Today's problems are harder to solve.
Hypotheses: Exposure Data

- **June 12: Data from 45 patients analyzed**
  - ***E. coli* O157 supplemental forms**
  - **State enteric questionnaires**

Possible Vehicles

- **Strawberries (91%)**
- **Ice Cream (88%)**
- **Ground beef (84%)**
- **Apples (71%)**
- **Lettuce (70%)**
- **Carrots (64%)**
- **Bologna (50%)**
- **[Poultry (95%)]**

Unlikely Vehicles

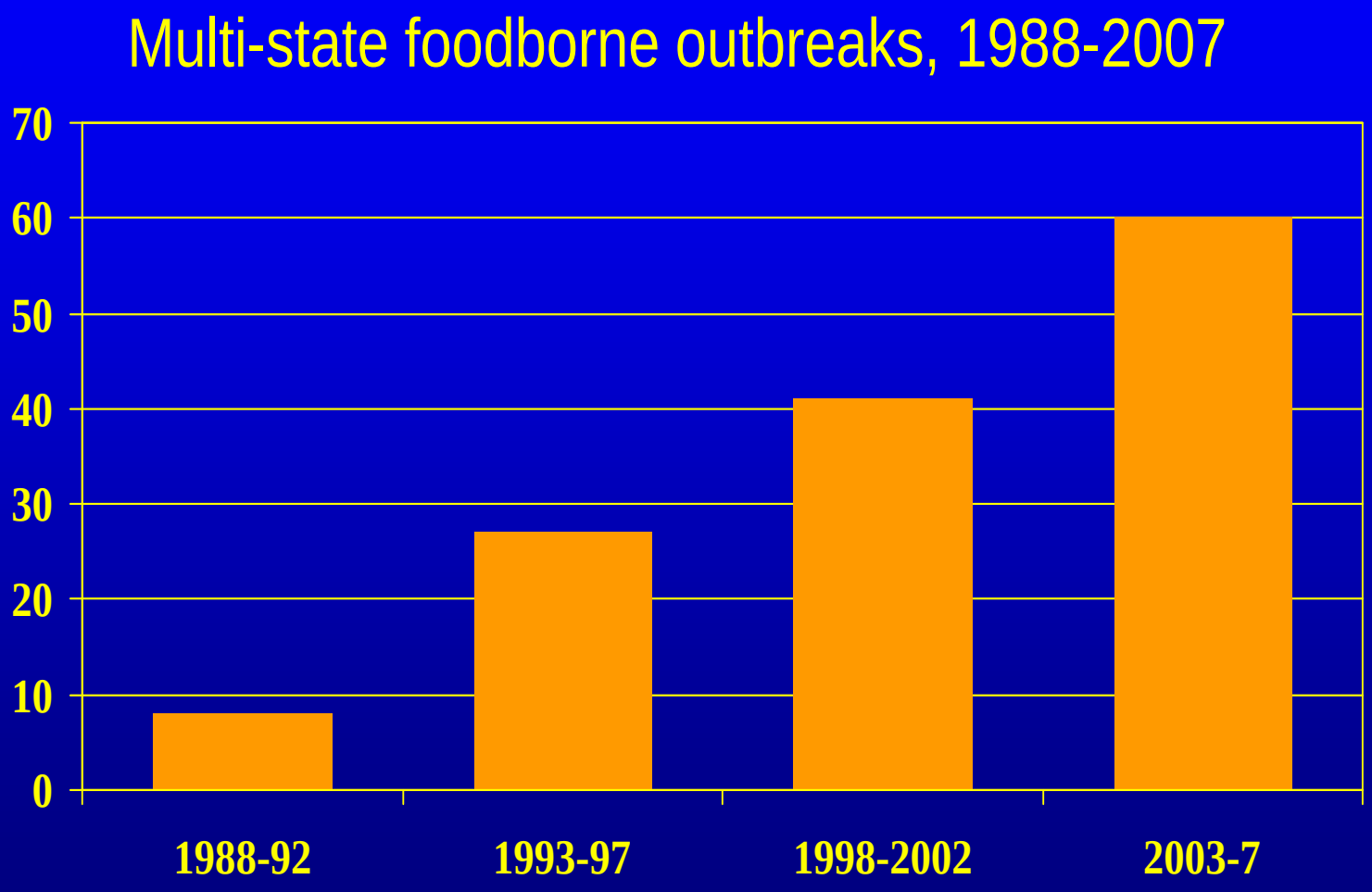
- **Prepackaged lettuce (39%)**
- **Spinach (13%)**
- **Unpasteurized dairy (0%)**
- **Sprouts (6%)**
- **Melons (0 – 38%)**
- **Apple juice (10%)**
- **Pepperoni or salami (20%)**
- **Sausage (22%)**

Consequences: Challenging to investigate 1st S. Typhimurium Case-Control Study Results

Exposure	Cases (n=70)	Controls (n=178)	mOR* (95% CI)†
Any peanut butter	69%	48%	2.5 (1.3–5.3)
Any frozen chicken products	35%	14%	4.6 (1.7–14.7)

*** Matched Odds Ratio, † Confidence Interval**

Today's problems are harder to solve.

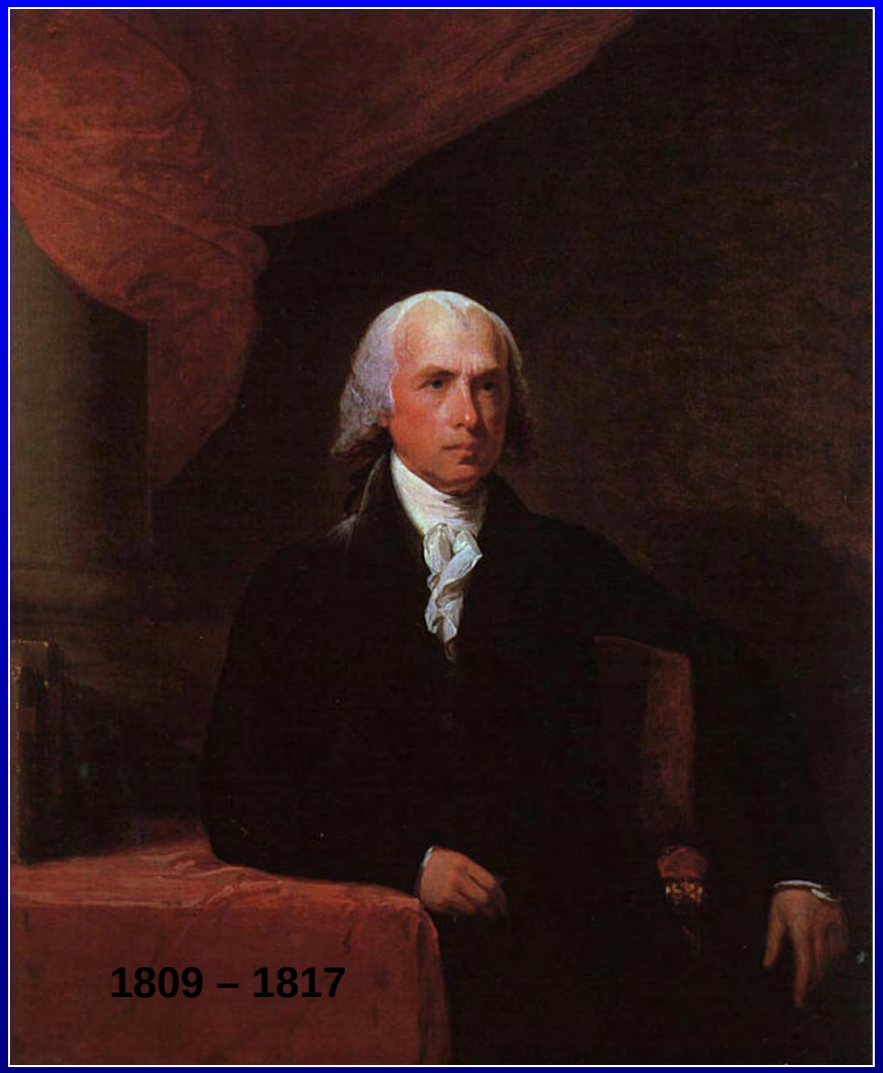


Preliminary data 2009

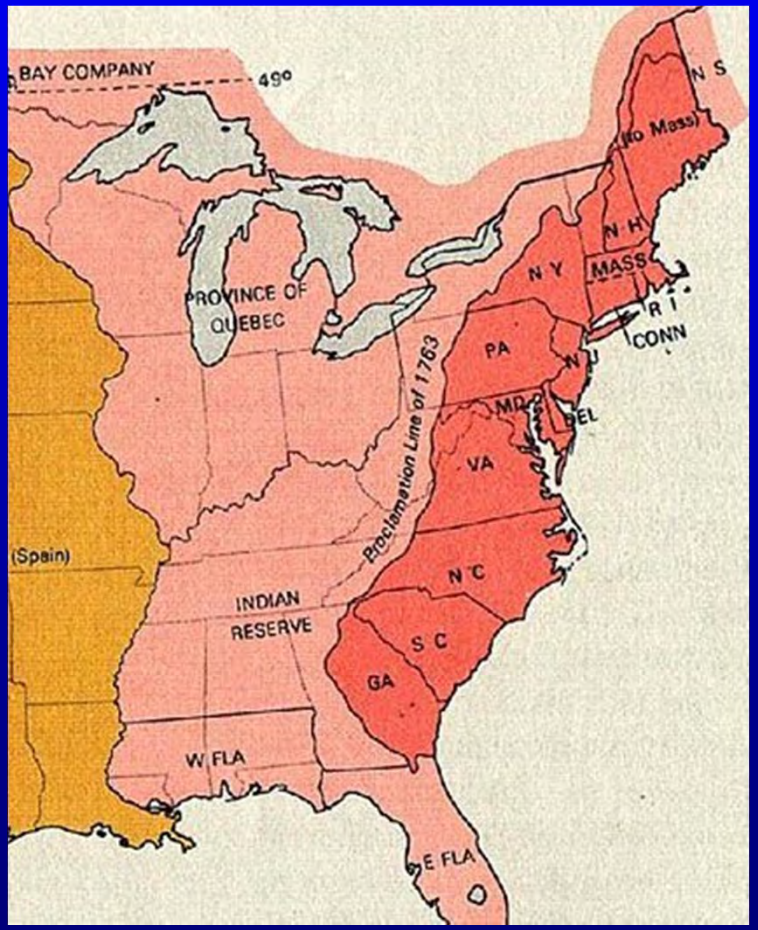
Source: CDC foodborne outbreak reporting system

18th Century systems …

Continental Congress, Philadelphia, 1787

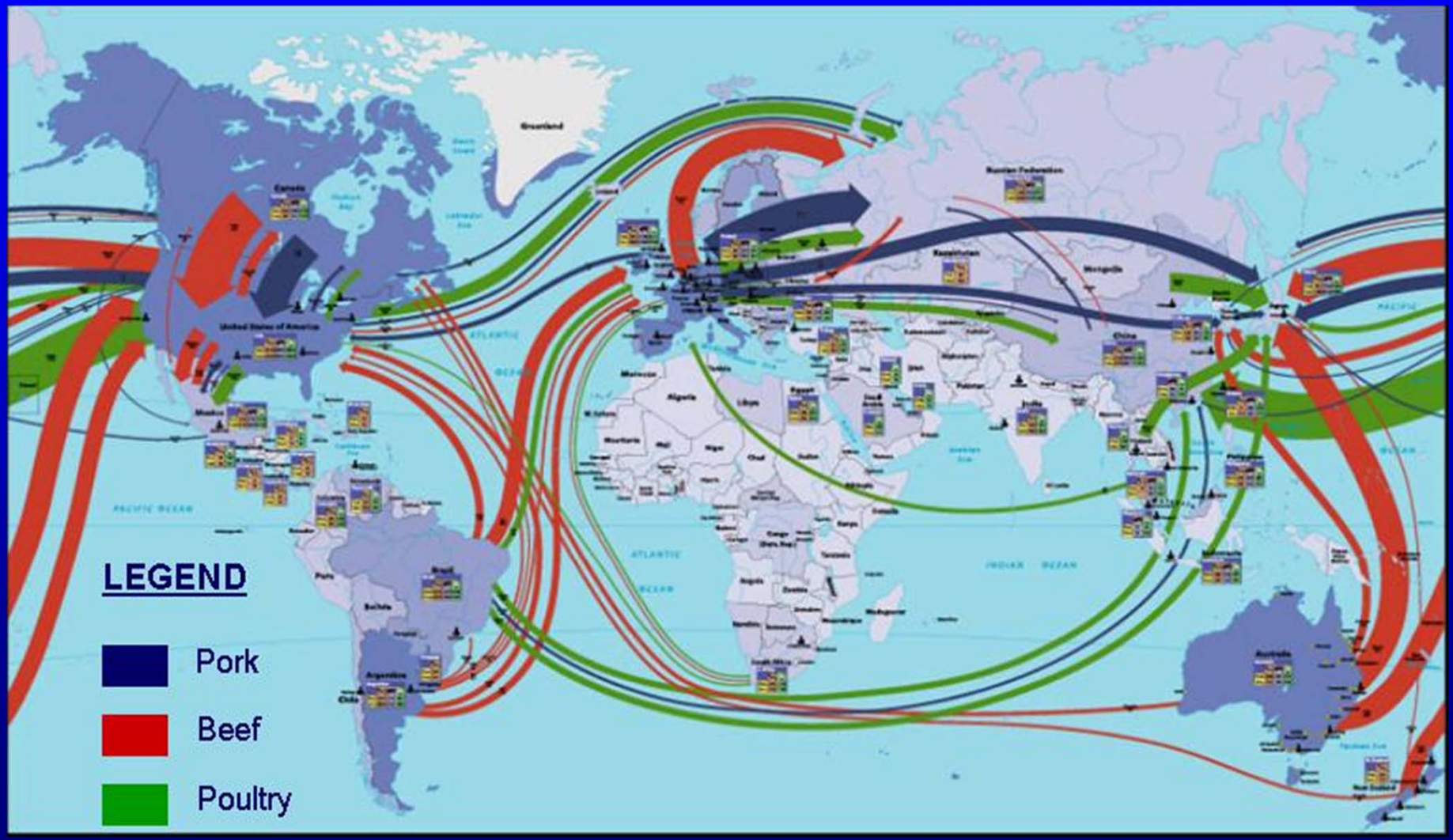


James Madison



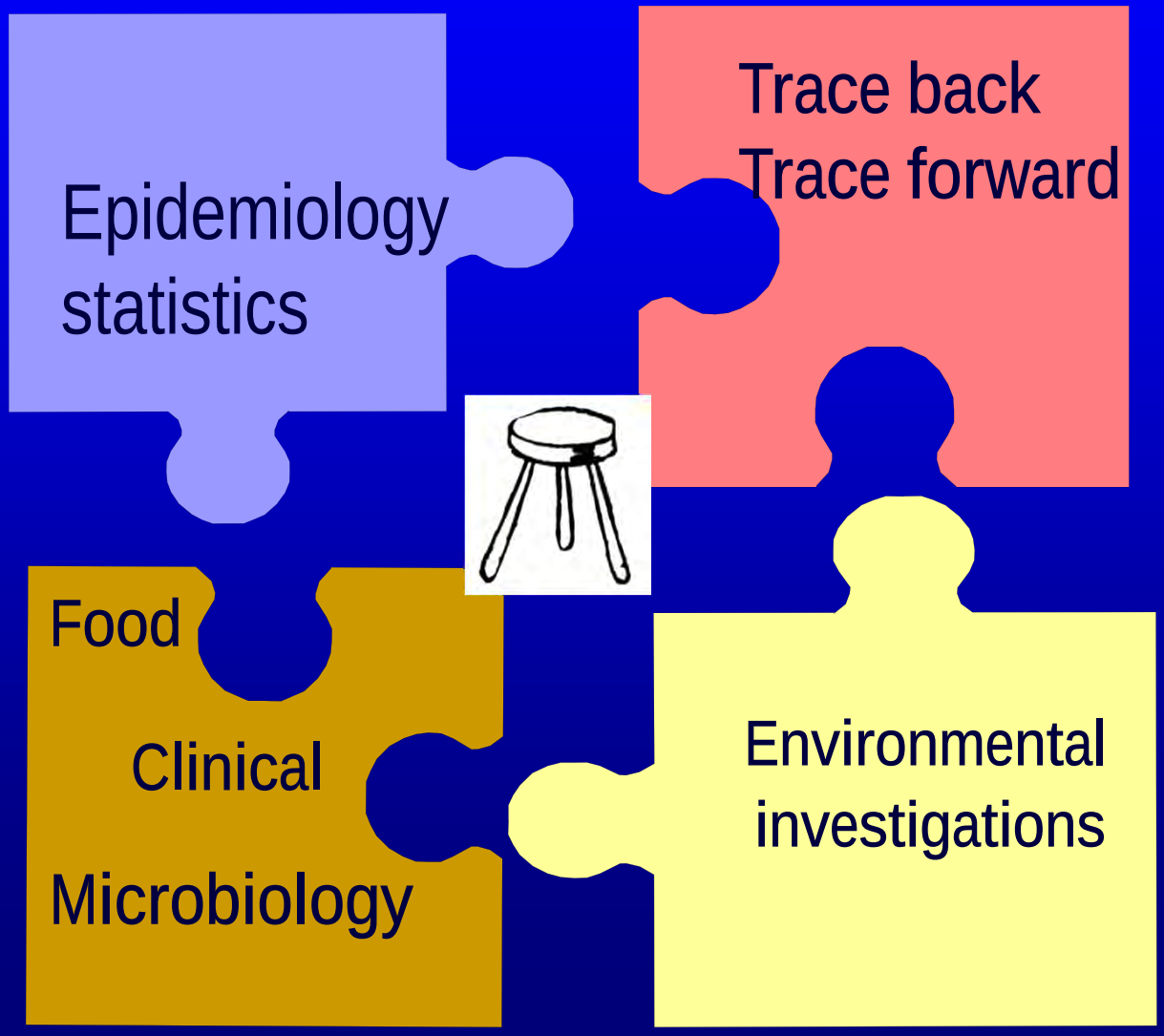
…a 21st Global Economy

Global Meat Trade



Source: Center for Global Food Issues

“Protecting Food Supply using Totality of Information/Data”



Environmental Health Services Branch Programs & Activities

- **Environmental Health Specialists Network (EHS-Net)**
  - Improve foodborne outbreak environmental assessments
  - Reporting environmental assessment data to CDC (NVEAIS)
  - Training on how to conduct environmental assessments
  - Special studies on ‘hot topics’

EHS-Net Special Studies

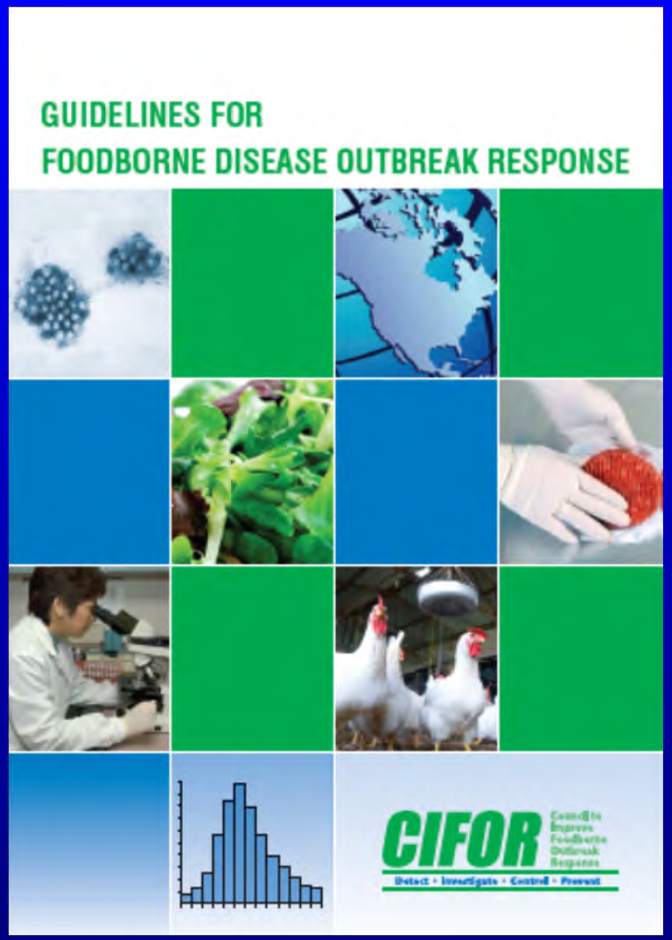
- Leafy Green Study
- Cooling Study
- Kitchen Manager Knowledge Study
- Foodborne Outbreak Study
- Salsa Handling Practices In Restaurants
- USDA / FSIS Listeria In Retail Delis
- Food Allergen Study

Outbreak Response Assistance

- Environmental Technical Support To Local, State, And Federal Agencies During Foodborne Outbreak Events. *Examples:*
  - 2006 *E. coli* outbreak associated with spinach (CA/FDA)
  - 2008 *Salmonella* Saintpaul outbreak associated with tomatoes/peppers (FDA/CDC/TX)
  - 2008 *Salmonella* Montevideo (Maricopa Co., AZ)

Council to Improve Foodborne Outbreak Response

- Conduct environmental assessments
- Industry Group



National Voluntary Environmental Assessment Information System Timeline

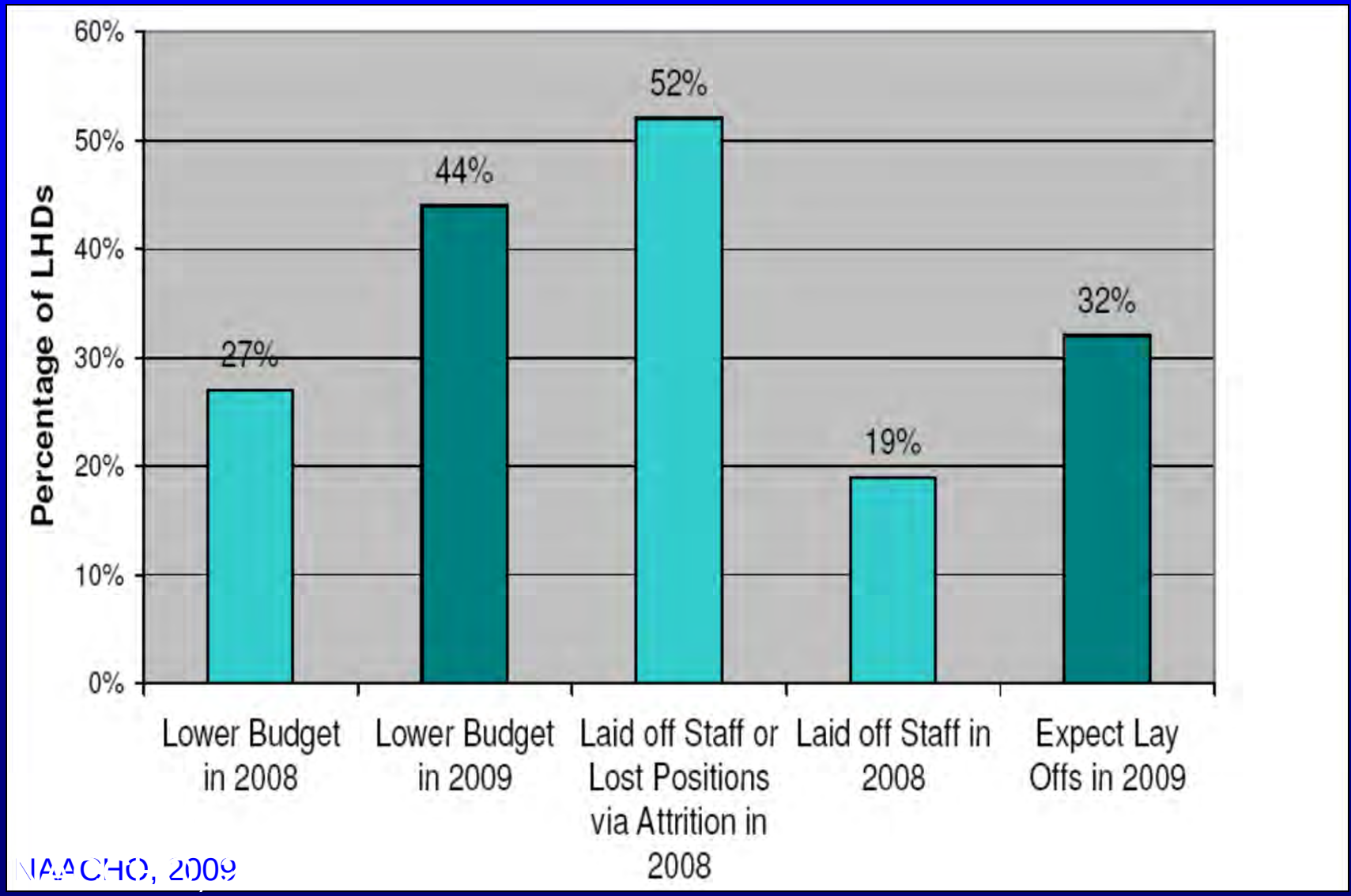
Now	Conference for Food Protection Review
2010	Open pilot for state/local program participation
2011	Launch training on conducting foodborne outbreak environmental assessments
2011	Official reporting to the system

Environmental Health Services Branch
New Training Courses - 2010

- Environmental Health Training in Emergency Response (*EHTER*)
  - Online Course – over 9,000 trained / Automatic C.E.'s
  - *New* Partnership with Homeland Security – 50 – 100 Students per month @ Center for Domestic Preparedness at *No Cost* to state and local environmental health programs
- Environmental Public Health Online Courses (*EPHOC*)
  - Comprehensive - 15 courses on all areas of EH / 45 hours taught by experts / 40 – 60 minute modules in Learning Management Sys.
  - New hires / credential exam prep / continuing education – *Free*
- Info @ www.cdc.gov/nceh/ehs

Click to Play

Cuts to Local Health Departments: 2008 and 2009



NACCHO, 2009

Thank you,

Which way to reception?