

**Coordinated food surveillance and response
systems in the United States:
Centers for Disease Control and Prevention**

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CDC is a non-regulatory, independent, science-based agency

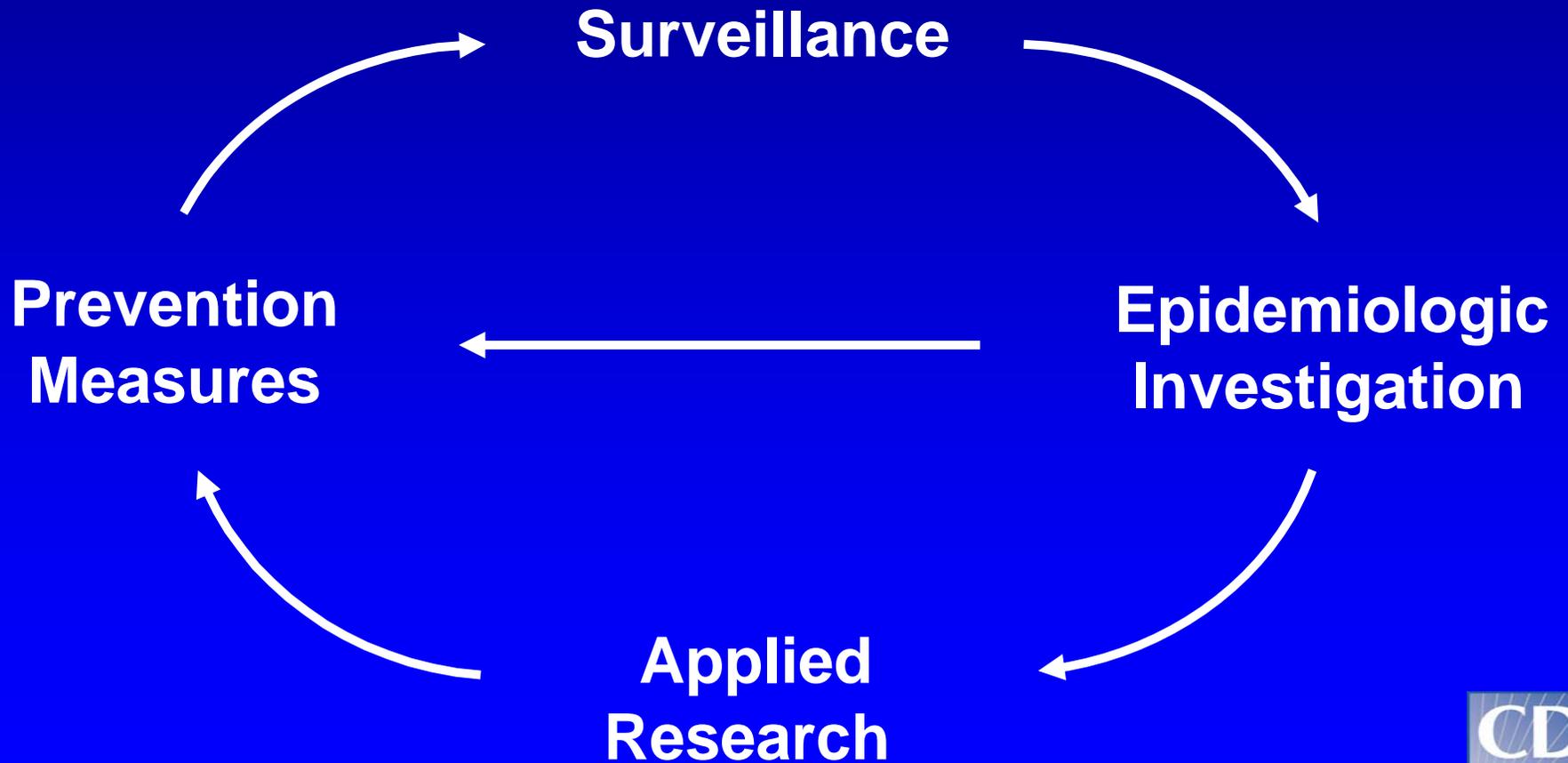
Our mission:

Prevent illness, disability, and death due to bacterial foodborne and diarrheal diseases in the United States and worldwide

We accomplish our mission by...

- conducting national surveillance, outbreak response, applied research, training, and education
- conducting investigations that determine causes and sources that form the basis for prevention methods
- collaborating with microbiologists, state health officials, regulatory agencies, and many other agencies to develop interventions

Cycle of Foodborne Disease Control and Prevention



Laboratory-based surveillance

- Begins when ill person seeks medical care
 - Specimen collected and tested at clinical laboratory
 - Clinical laboratory reports isolation AND submits isolate to public health laboratory for isolate characterization
- Surveillance networks coordinated by CDC
 - PulseNet
 - OutbreakNet
 - FoodNet



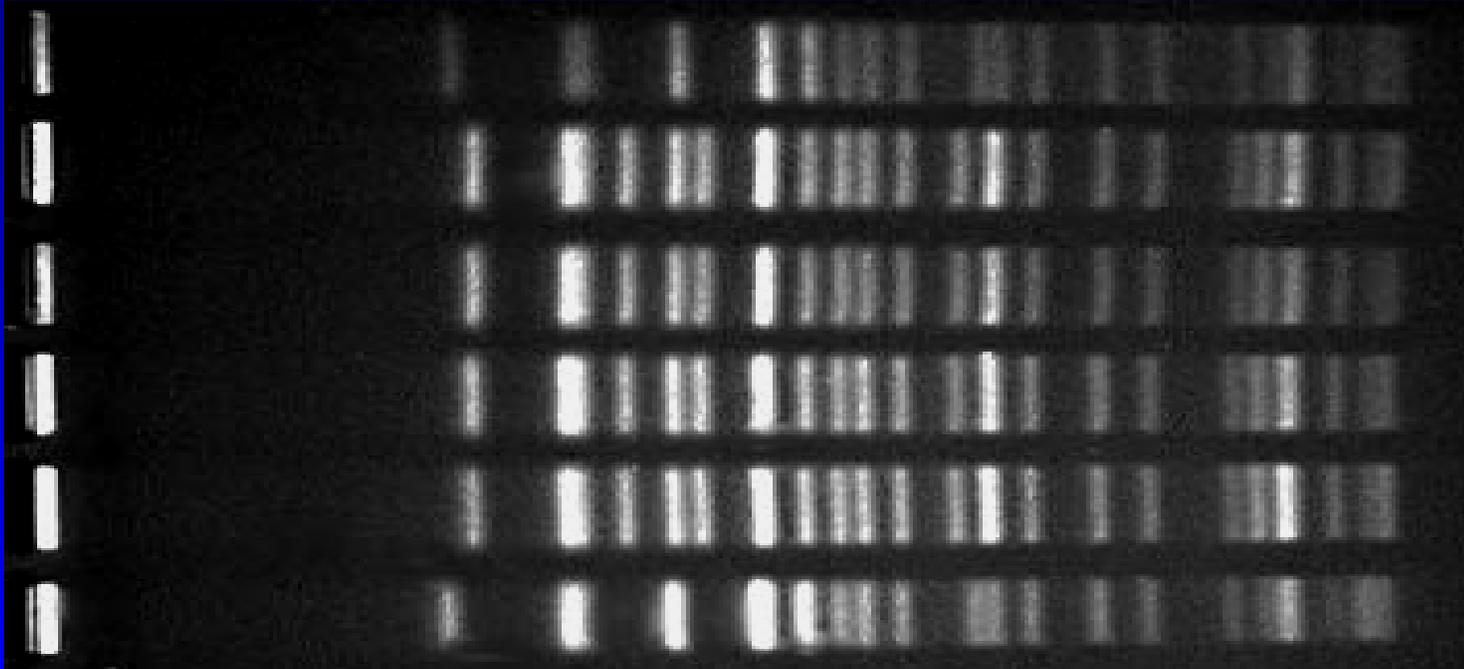
- International molecular subtyping network for foodborne disease surveillance
- Use highly standardized methodology
- Current method is pulsed-field gel electrophoresis (PFGE)
- Compare patterns electronically via internet with national database at CDC
- Impact: enhanced detection and investigation of outbreaks

Role of PFGE in outbreaks

PFGE subtyping can provide data on whether (or not)

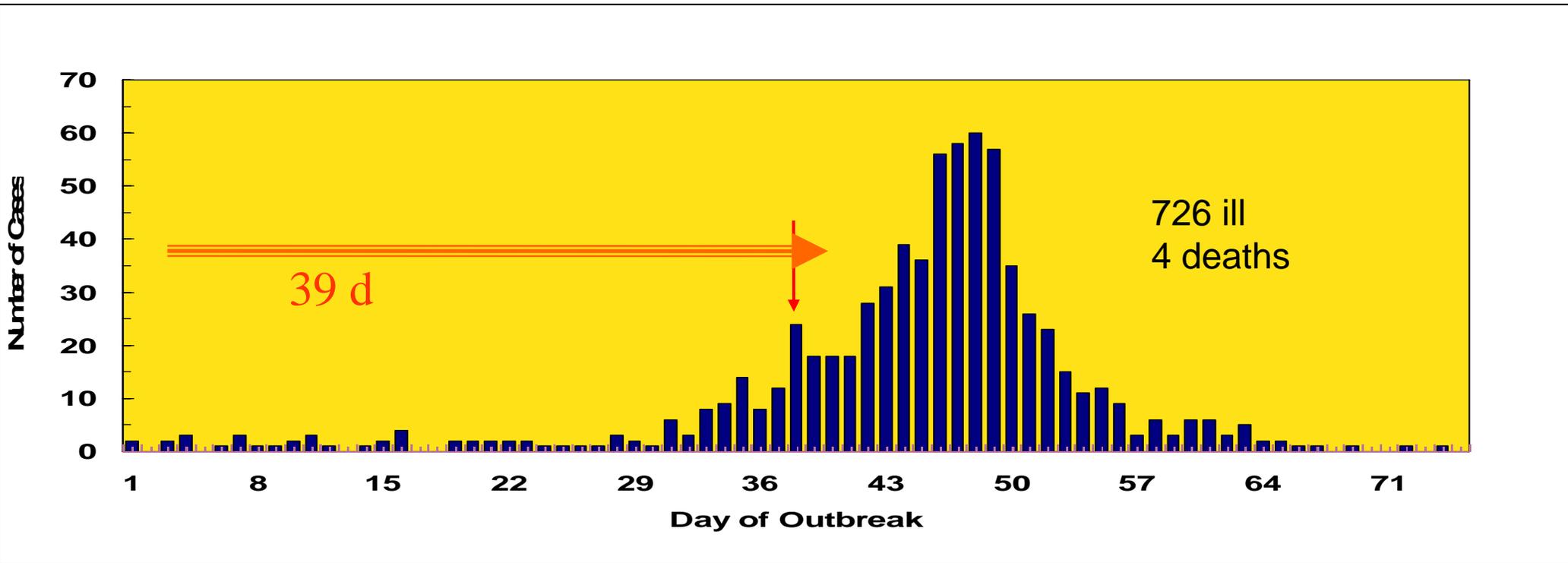
- A cluster of cases is from a common source
- 2 outbreaks are from a common source
- A particular case is linked to a known outbreak
- The implicated food and patients have the same strain

Example: PFGE results

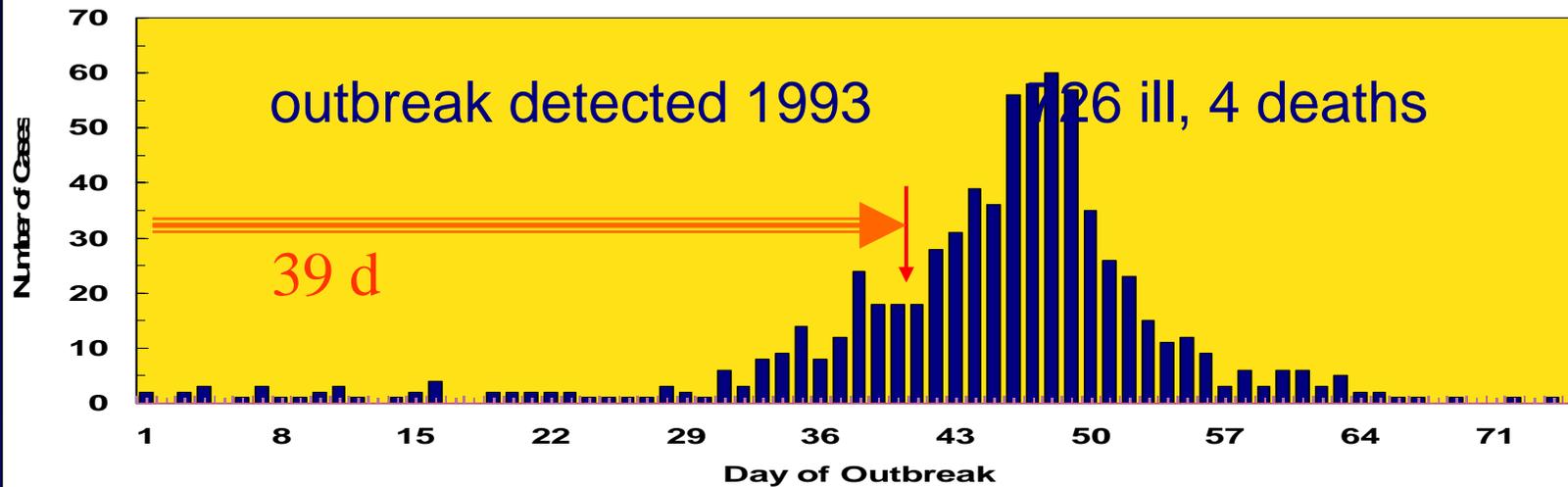


The Genesis of PulseNet

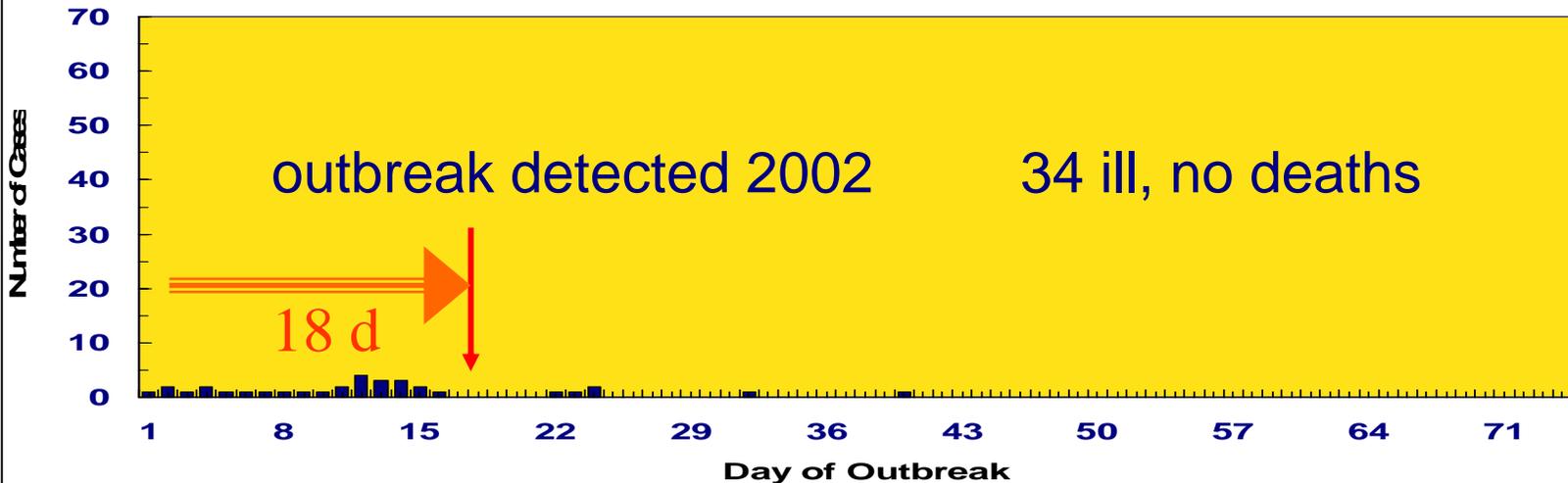
1993 Western States *E. coli* O157 Outbreak



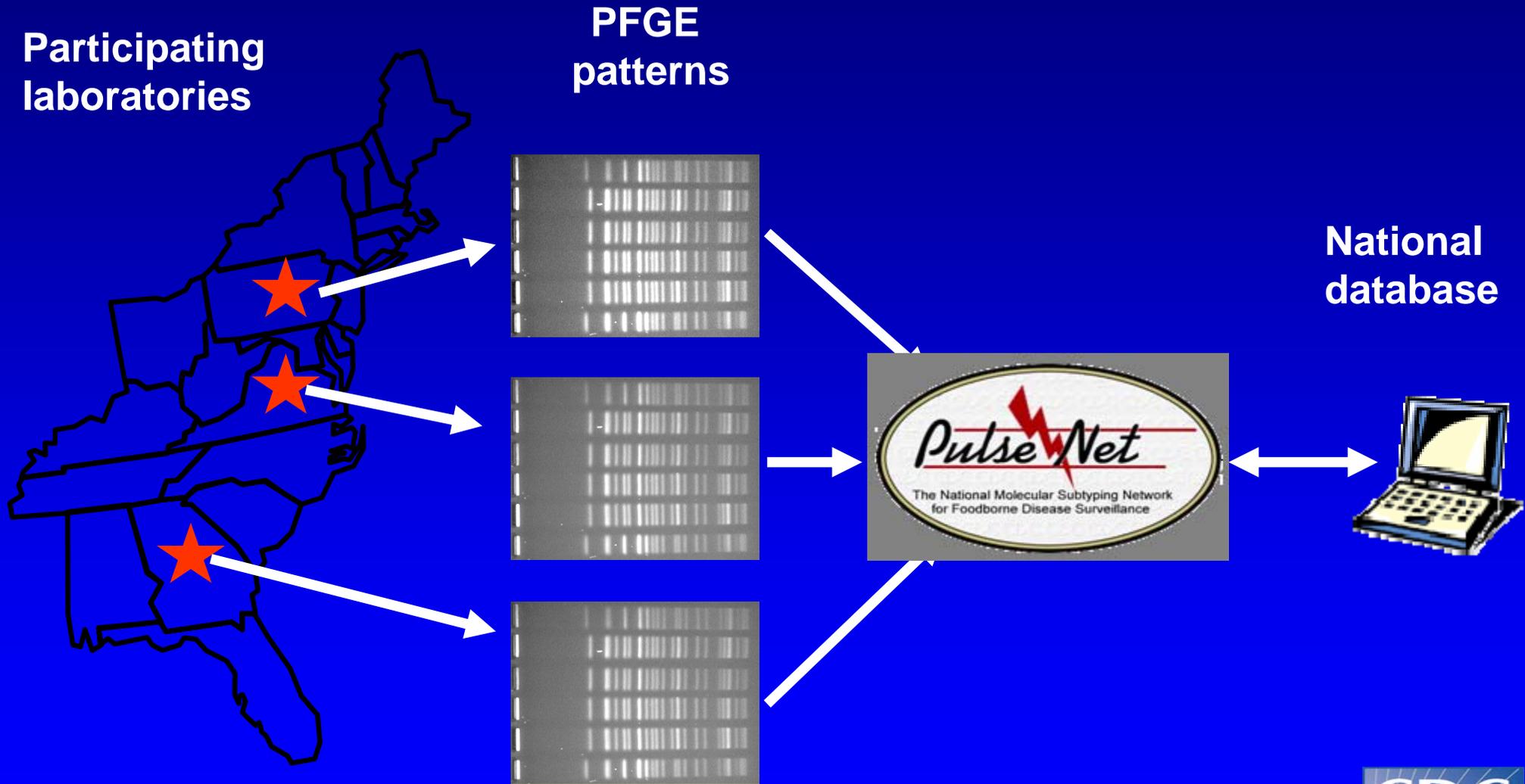
1993 Western States *E. coli* O157 Outbreak



2002 Colorado *E. coli* O157 Outbreak

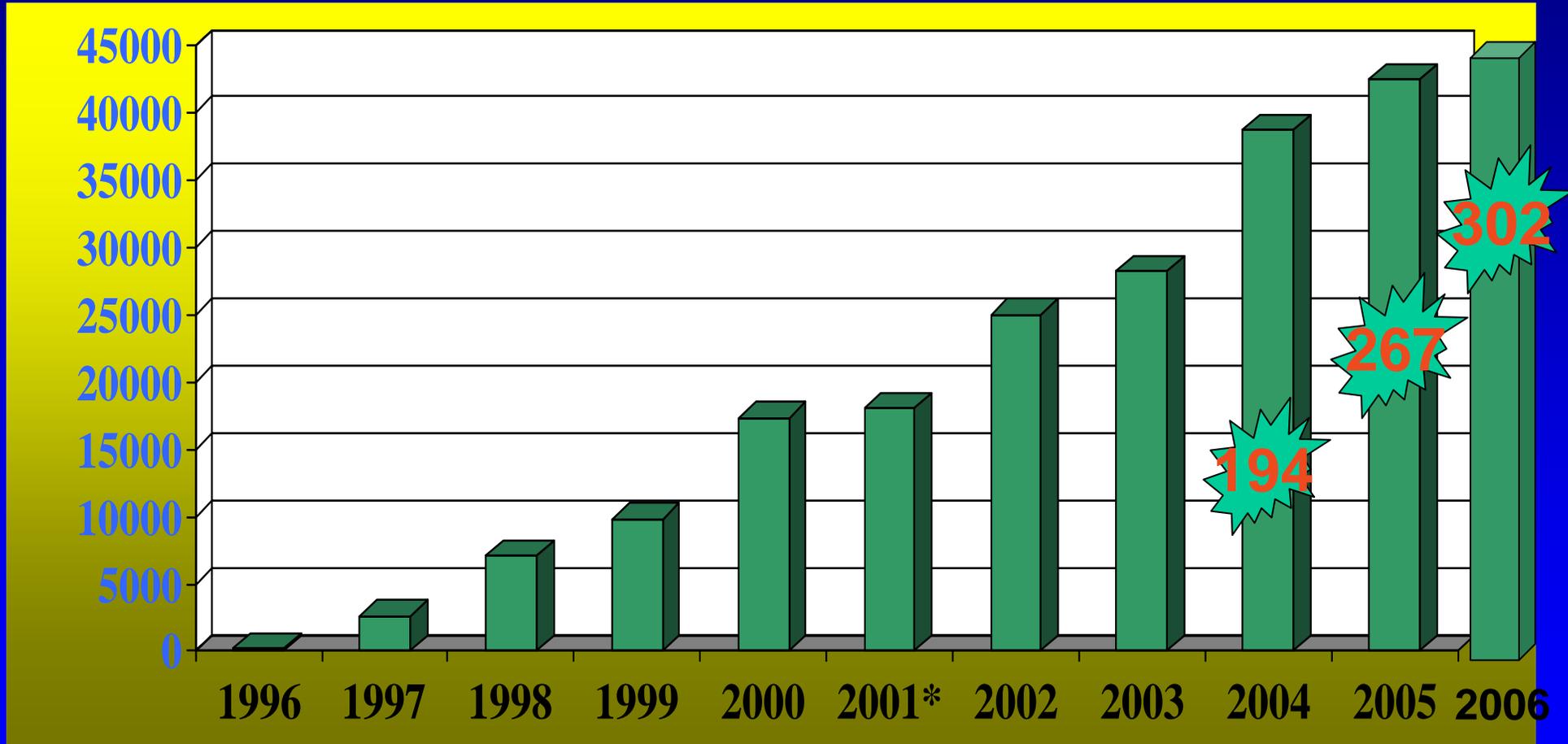


Laboratory Coordination through PulseNet



PulseNet Activity, 1996-2006

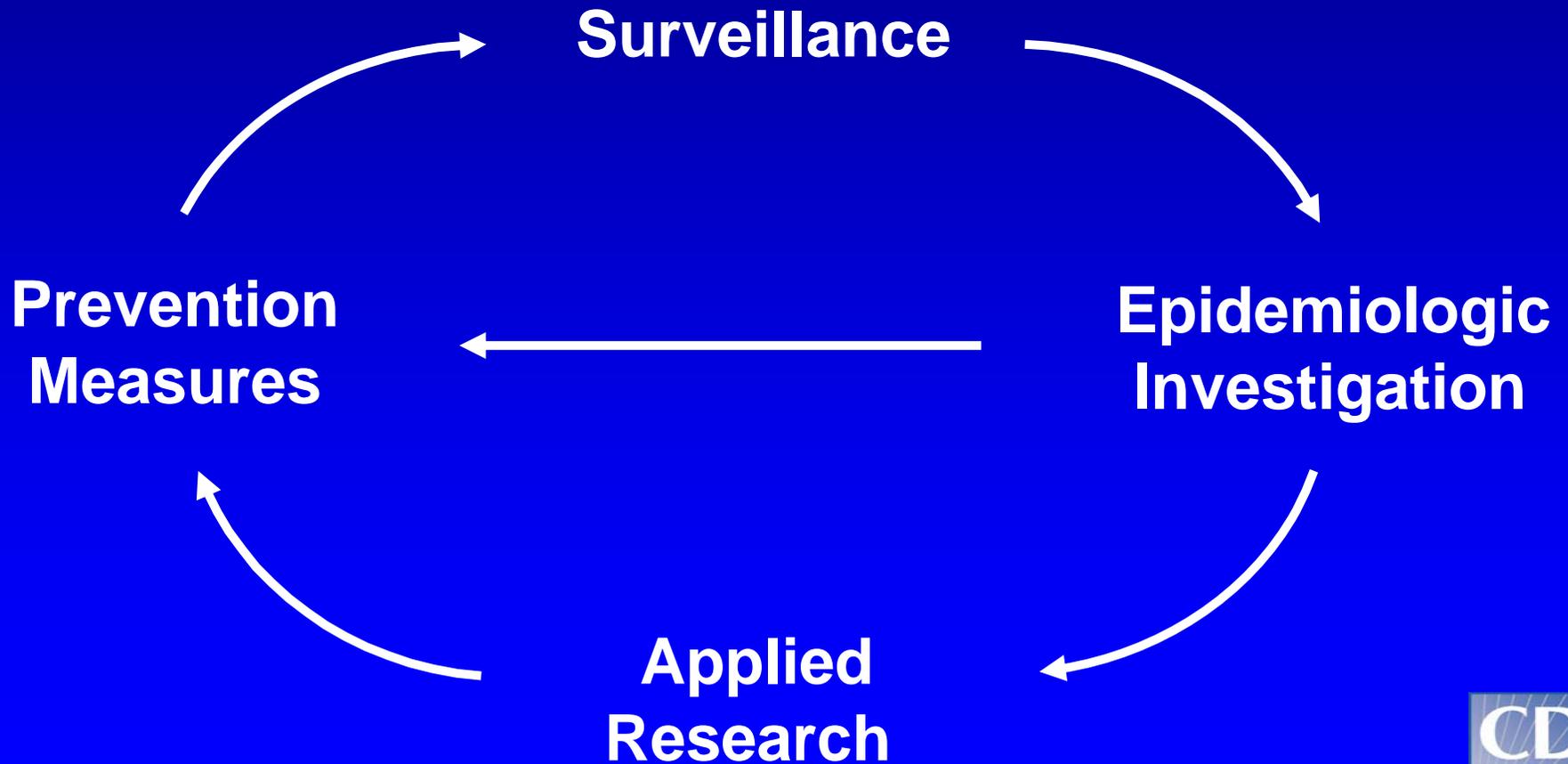
PFGE patterns submitted to PulseNet Databases



Clusters



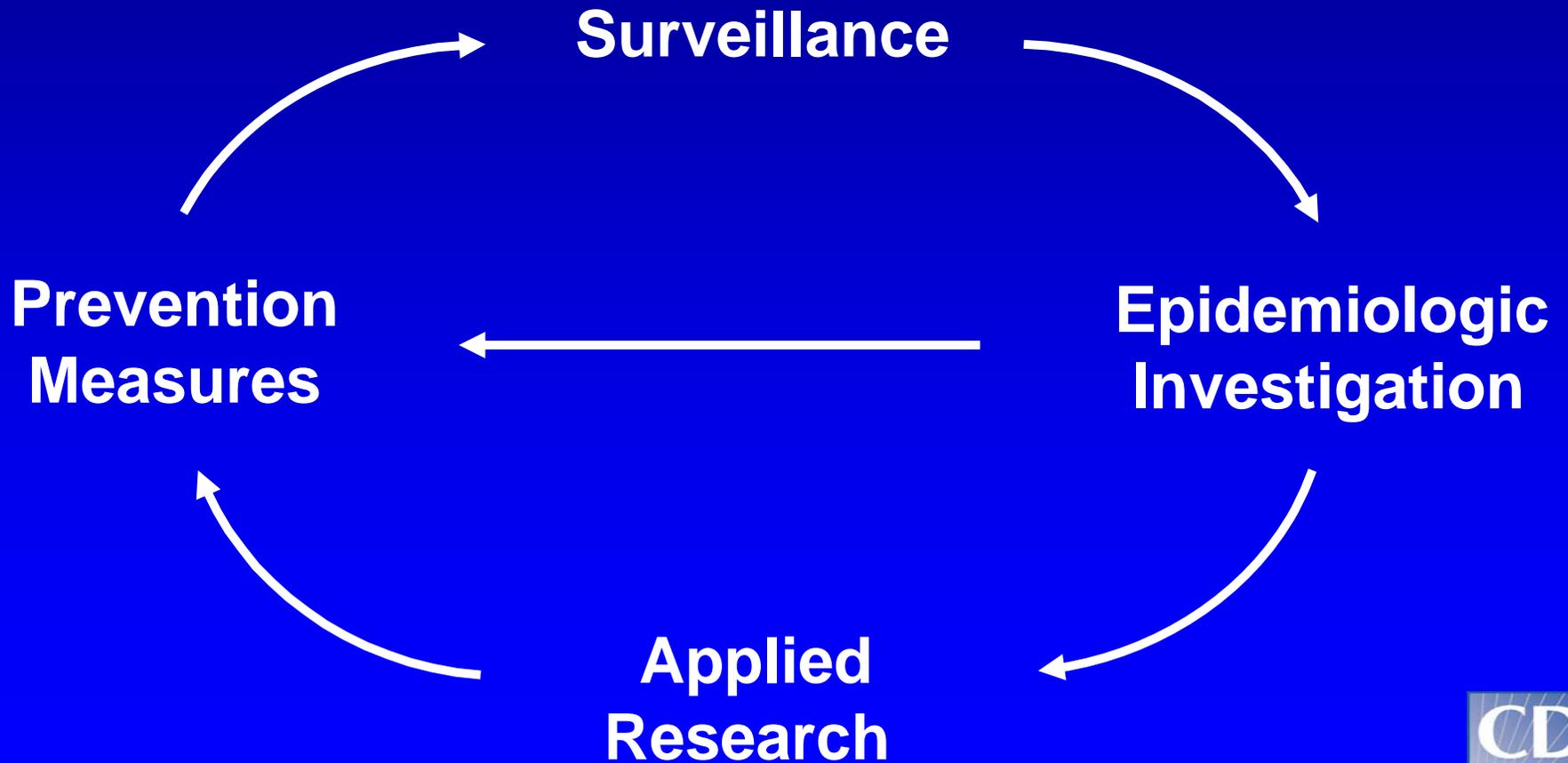
Surveillance Drives the Cycle of Prevention



OutbreakNet

- Network of state and federal public health officials in the US who investigate foodborne disease outbreaks
 - Epidemiologists, laboratorians, regulators in all 50 states
 - Long-standing collaboration formalized in 2006
 - Collaborate on outbreak investigations and outbreak surveillance

Cycle of Foodborne Disease Control and Prevention

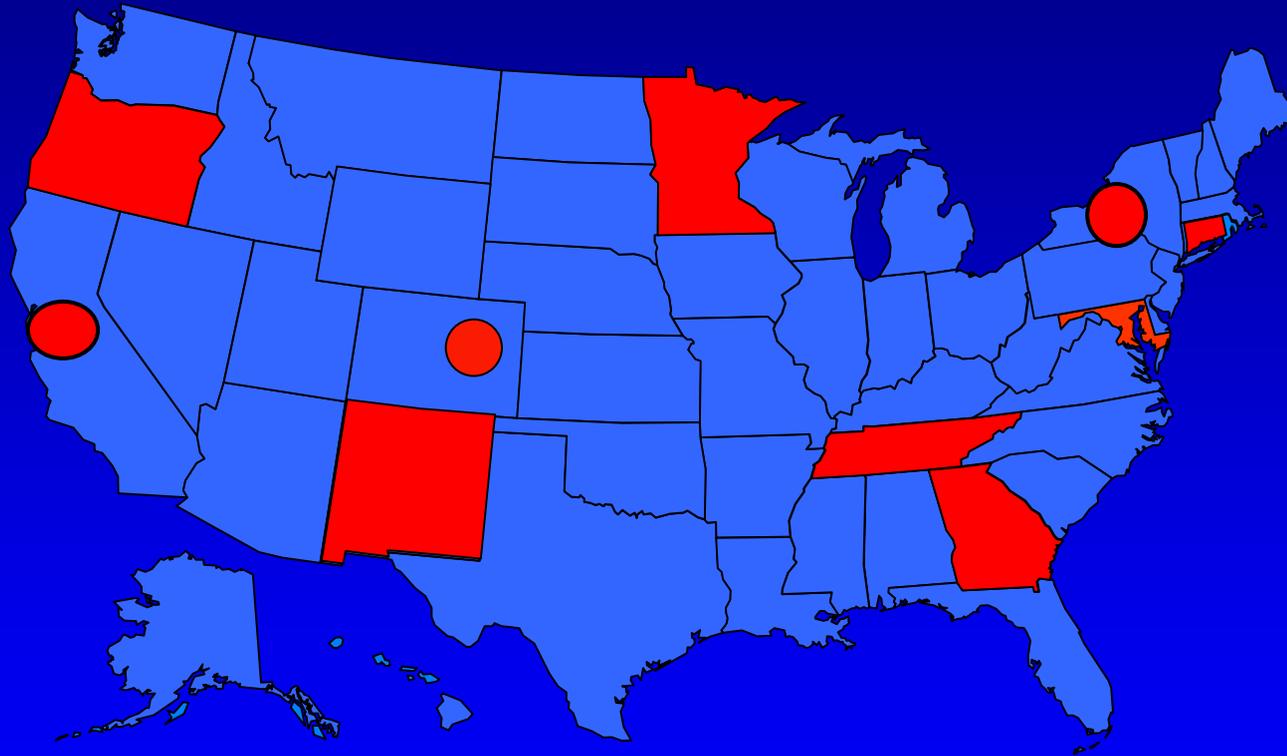


FoodNet

(Foodborne Diseases Active Surveillance Network)

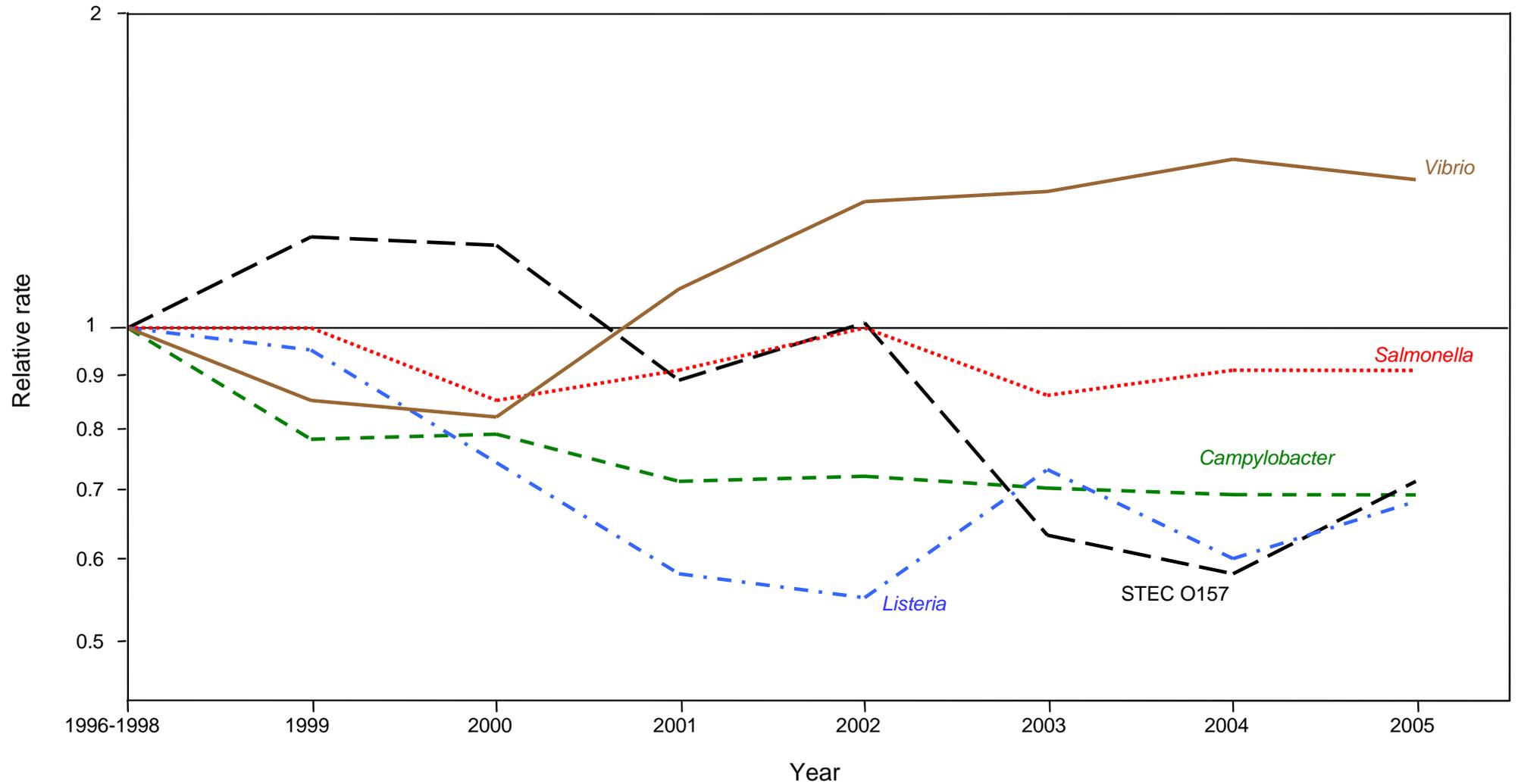
- Began in 1996
- Collaboration among CDC, 10 state health departments, US Department of Agriculture (USDA), and the Food and Drug Administration (FDA)
- Monitors trends in foodborne diseases

FoodNet Catchment Area, 2006

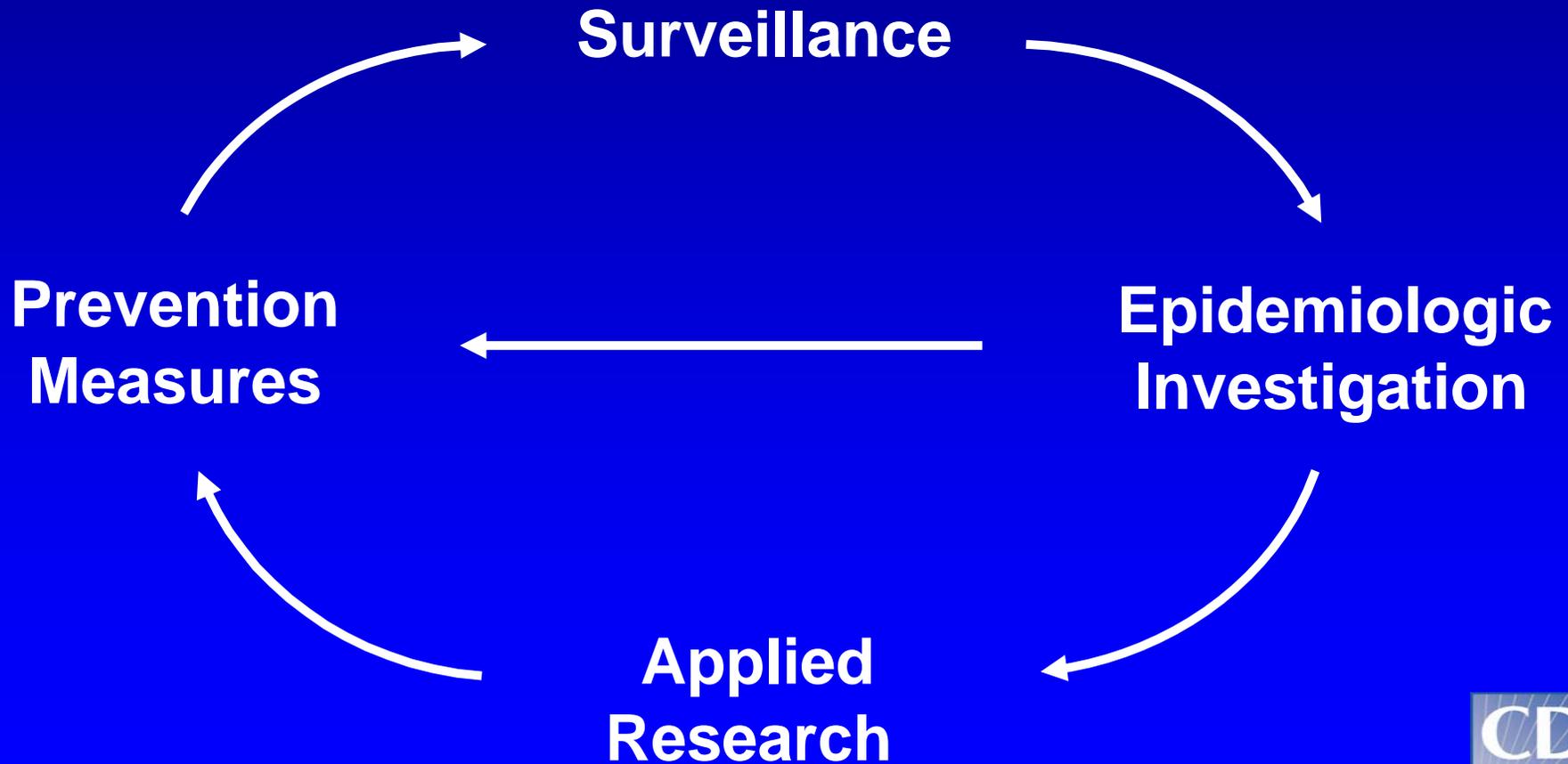


44.1 million persons (15% of U.S. population)

Figure 1. Relative rates compared with 1996–1998 baseline period of laboratory-diagnosed cases of infection with *Campylobacter*, STEC O157, *Listeria*, *Salmonella* and *Vibrio*, by year



Surveillance Drives the Cycle of Prevention



EDEB

