

Practice of Communicable Disease Surveillance in North Carolina

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Learning Objectives

1. Describe the network of surveillance partnerships for communicable disease in North Carolina
2. Interpret reported data as a function of true disease incidence within the community
3. List 4 public health uses of surveillance data

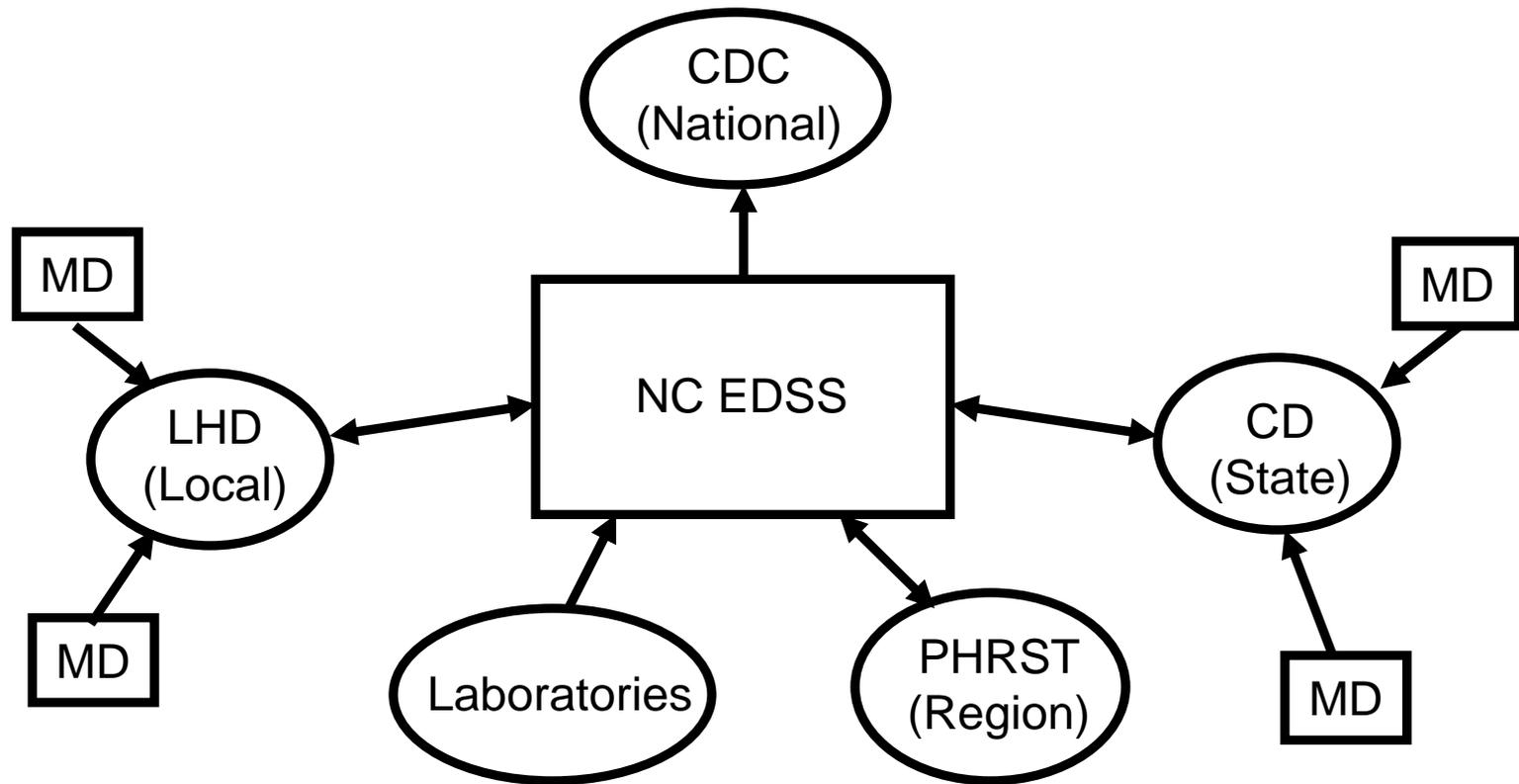
Public Health Partners in NC

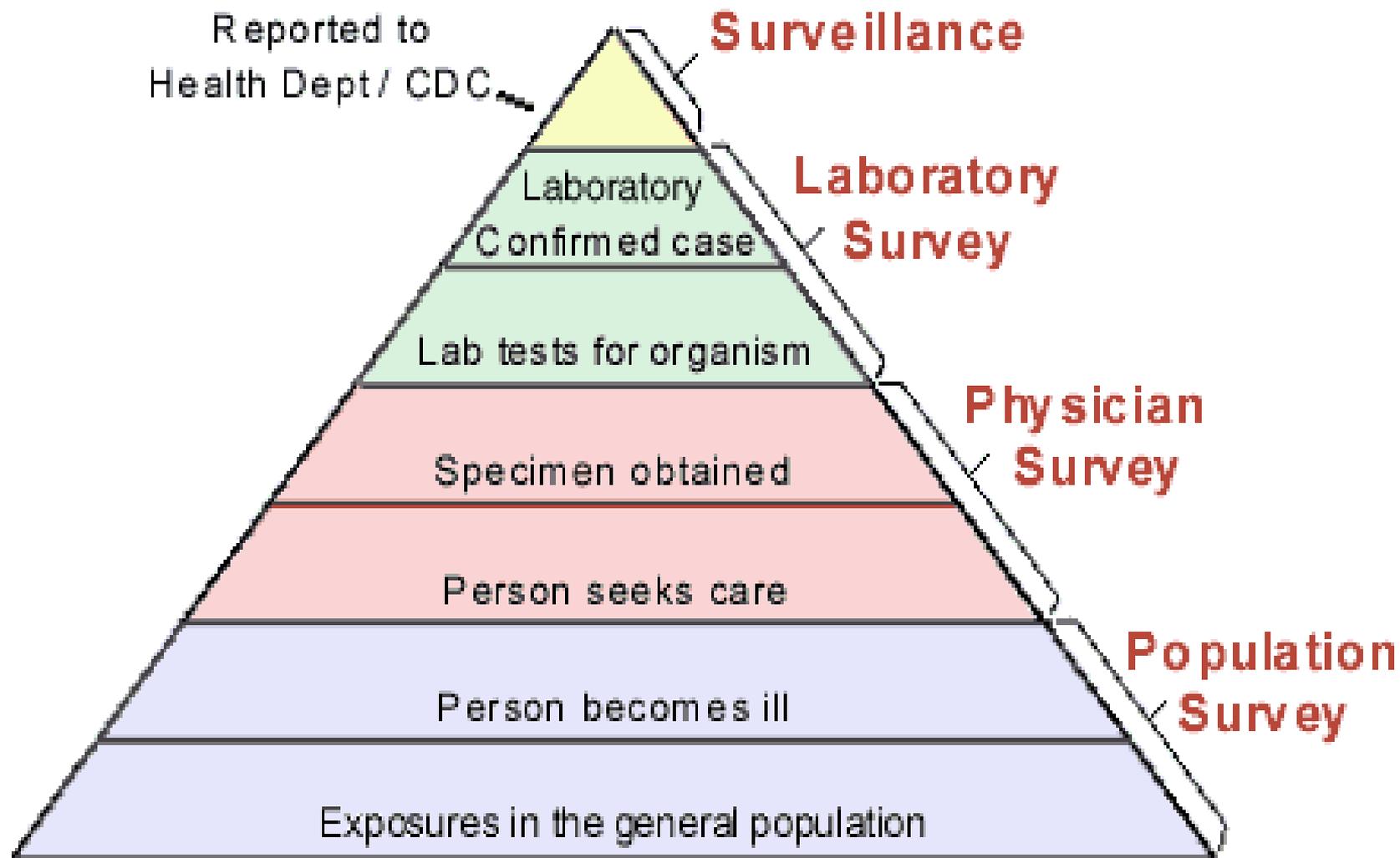
- Clinicians and laboratories
- 85 Local Health Departments
- 7 Regional teams (PHRST)
- 9 Regional Immunization Consultants
- 11 Hospital-based
Public Health Epidemiologists
- Regionally-based
Disease Intervention Specialists

Other Partners

- Centers for Disease Control and Prevention
- Epidemiology Section:
 - Occupational and Environmental Epidemiology
 - Office of Preparedness and Response
 - State Laboratory of Public Health

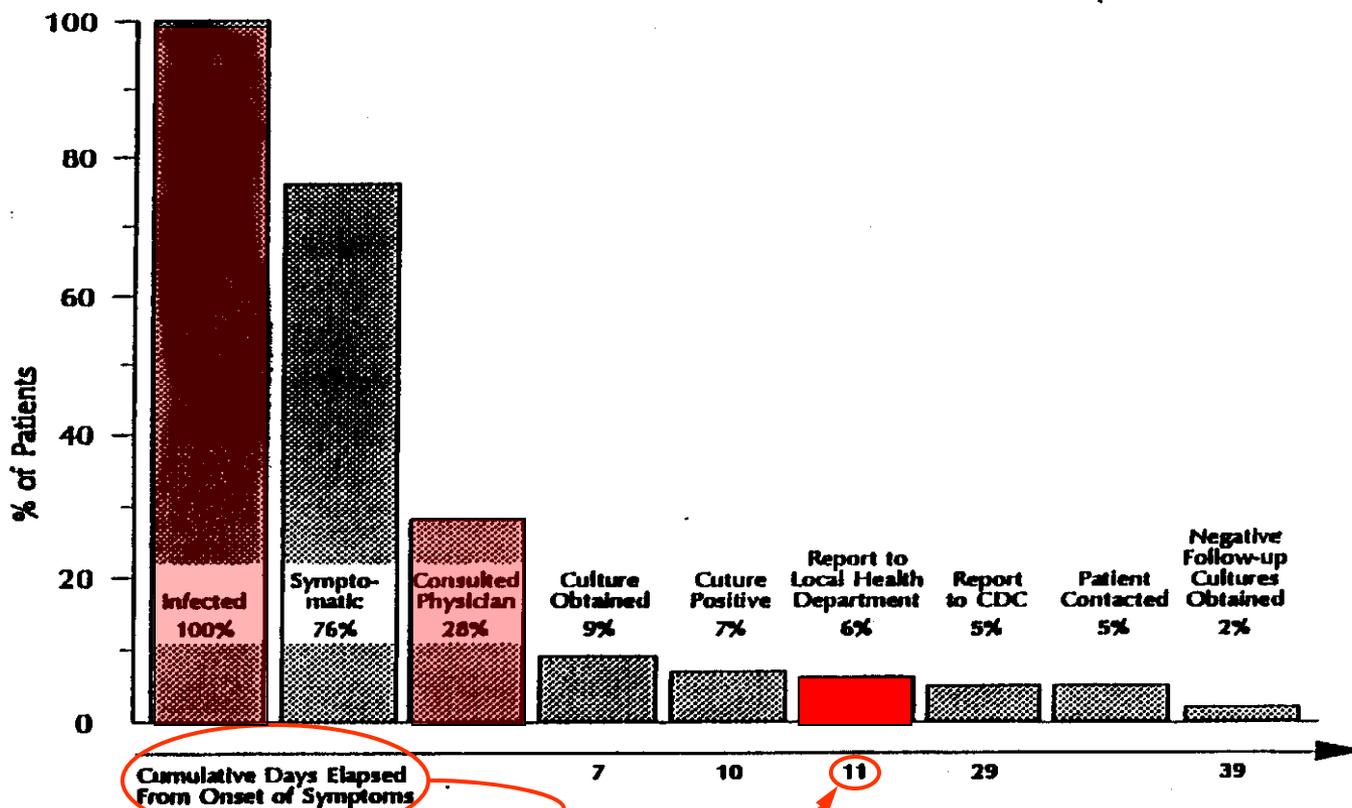
North Carolina Electronic Disease Surveillance System, NC EDSS





“Traditional” Surveillance Lacks Sensitivity and Provides Delayed Information

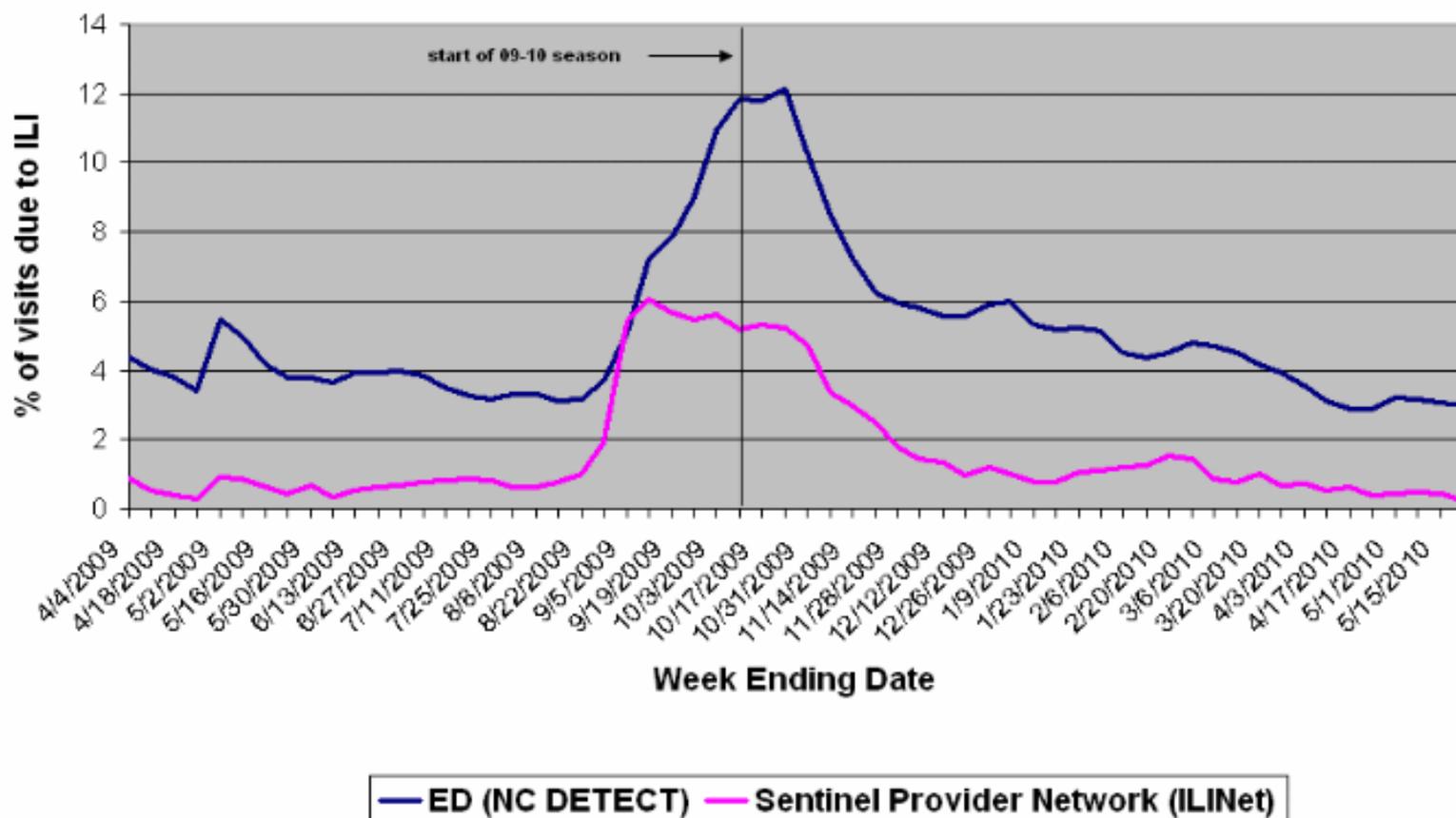
Completeness of case identification, reporting, and investigation of shigellosis



Uses of Surveillance Data

- Count cases and measure trends
- Identify risk factors
- Verify efficacy of control measures
- Allocate resources

Influenza-Like Illness Surveillance in North Carolina, 2009-2010



Analysis

- Changes in reported number of cases or incidence rate
 - Unexpected vs. expected or caused by artifacts
 - Trend
- Analyze in epidemiologic terms
 - Time
 - Place
 - Persons

Interpretation

- Taking into account:
 - Population changes
 - Changes in reporting procedure
 - Changes in personnel
 - Scientific progress: diagnostic techniques, control measures
 - Changes in disease patterns

Outbreak Patterns

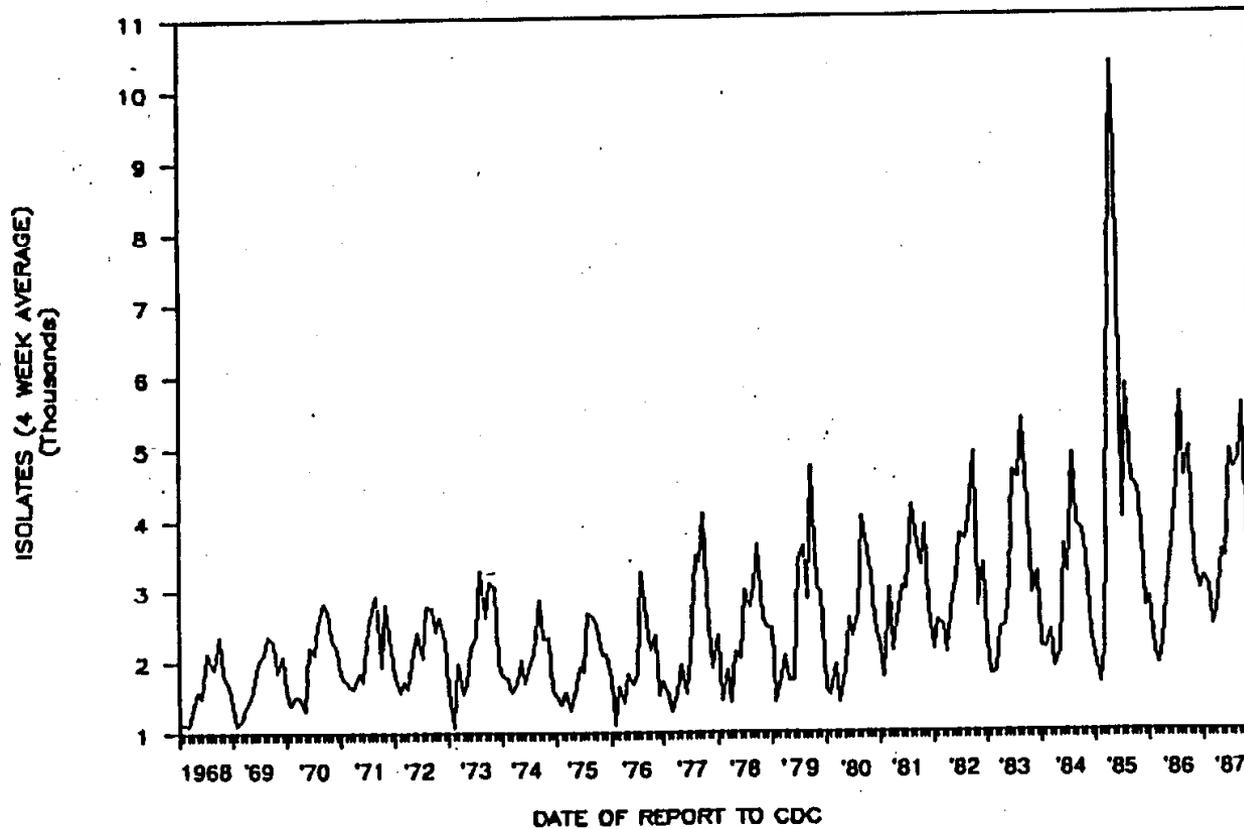
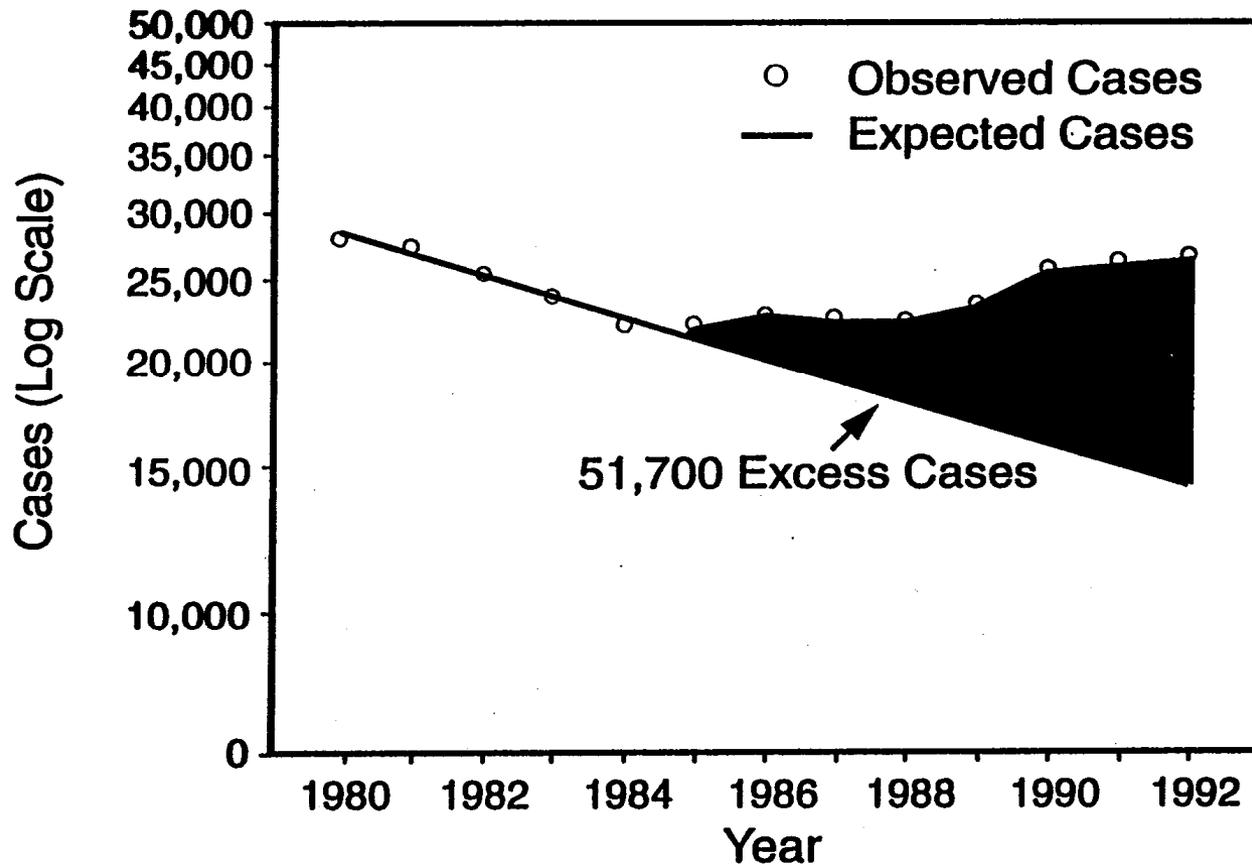


FIG. 3. Reported isolations of salmonellae from humans in the United States, 1968–1987. (Courtesy of Centers for Disease Control, Enteric Diseases Branch, Division of Bacterial Diseases, Atlanta, GA).

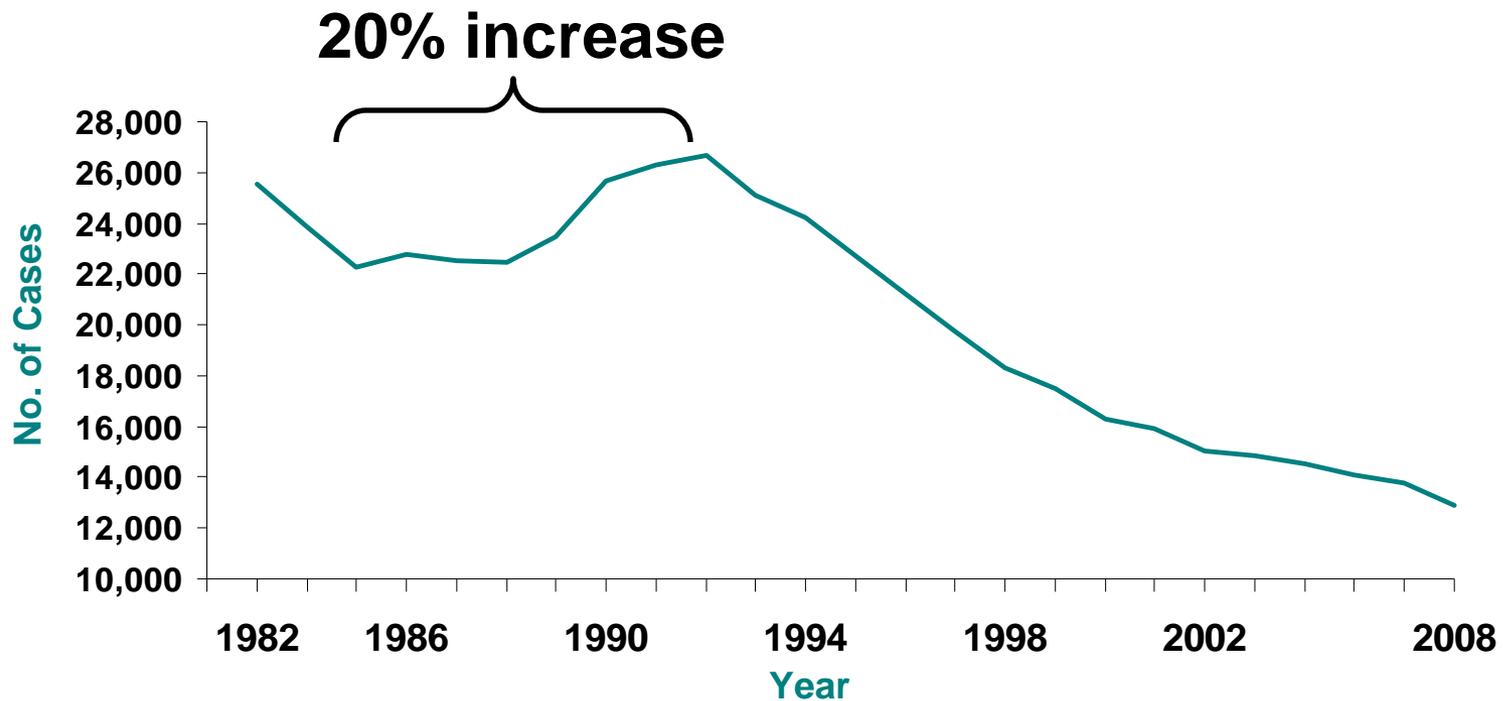
More Cases Observed Than Expected

FIGURE 1. Expected and observed number of tuberculosis cases — United States, 1980–1992



U.S. TB Resurgence

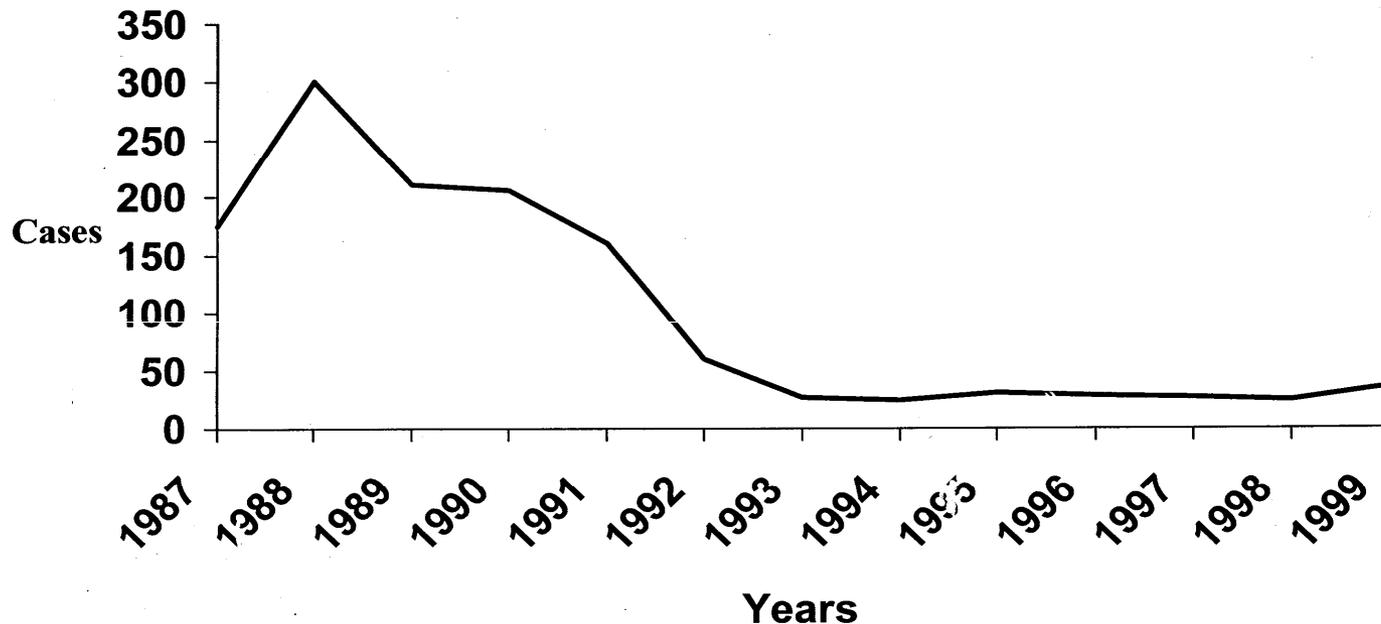
1986 - 1992



Reported TB Cases, U.S., 1982-2008

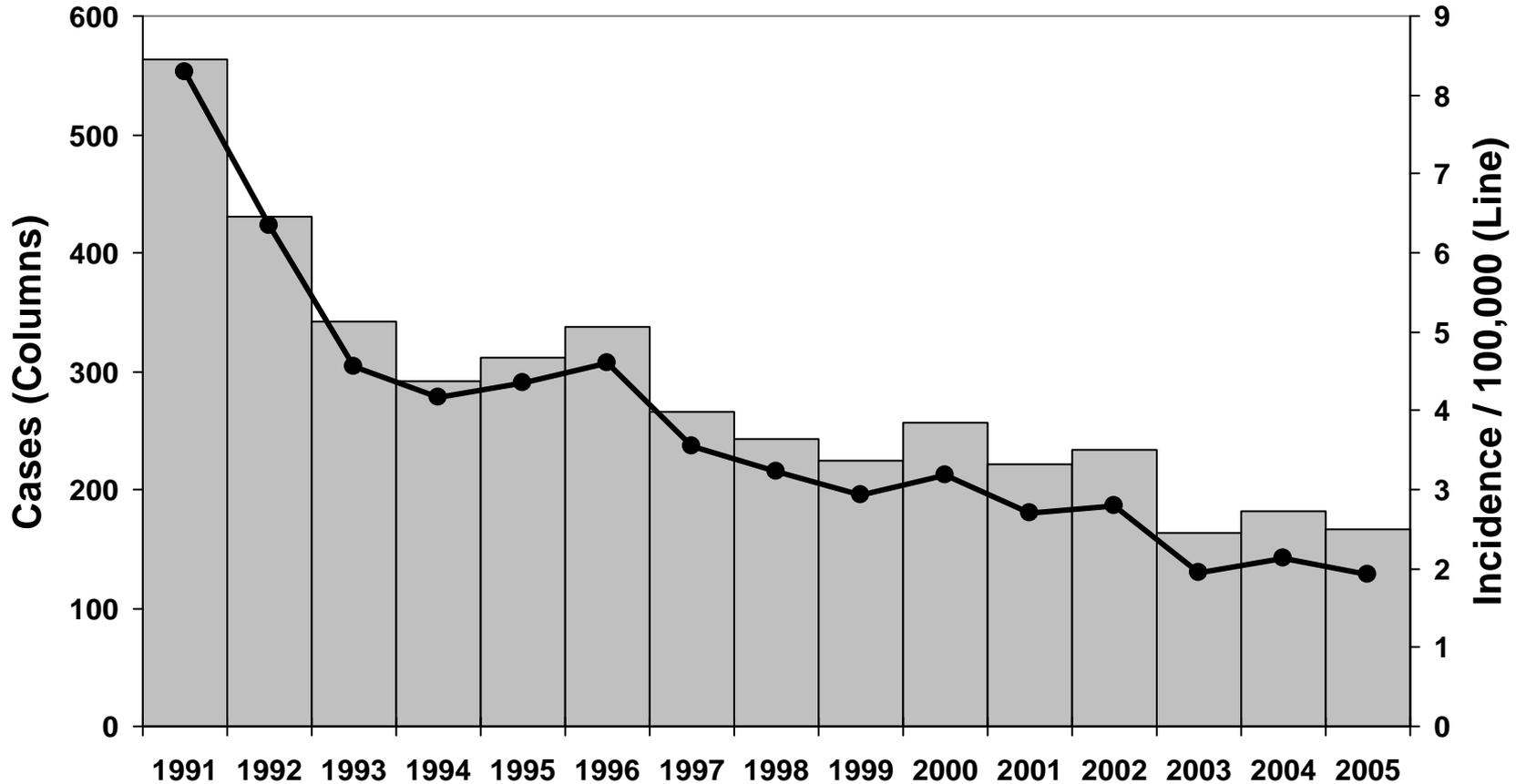
Monitoring effect of intervention

Cases of *H. influenzae* invasive disease reported in NC, 1987 - 1999

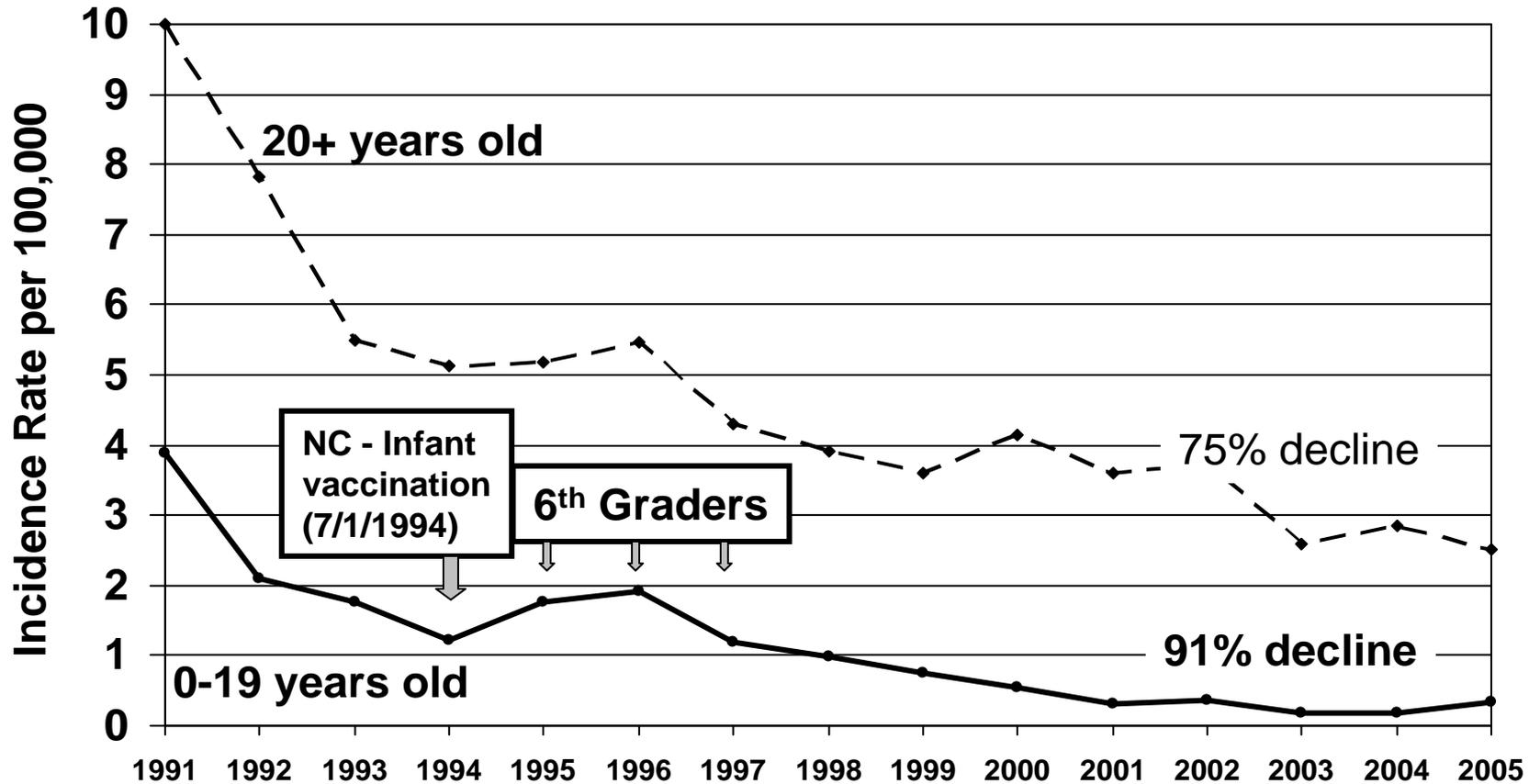


Hepatitis B, acute

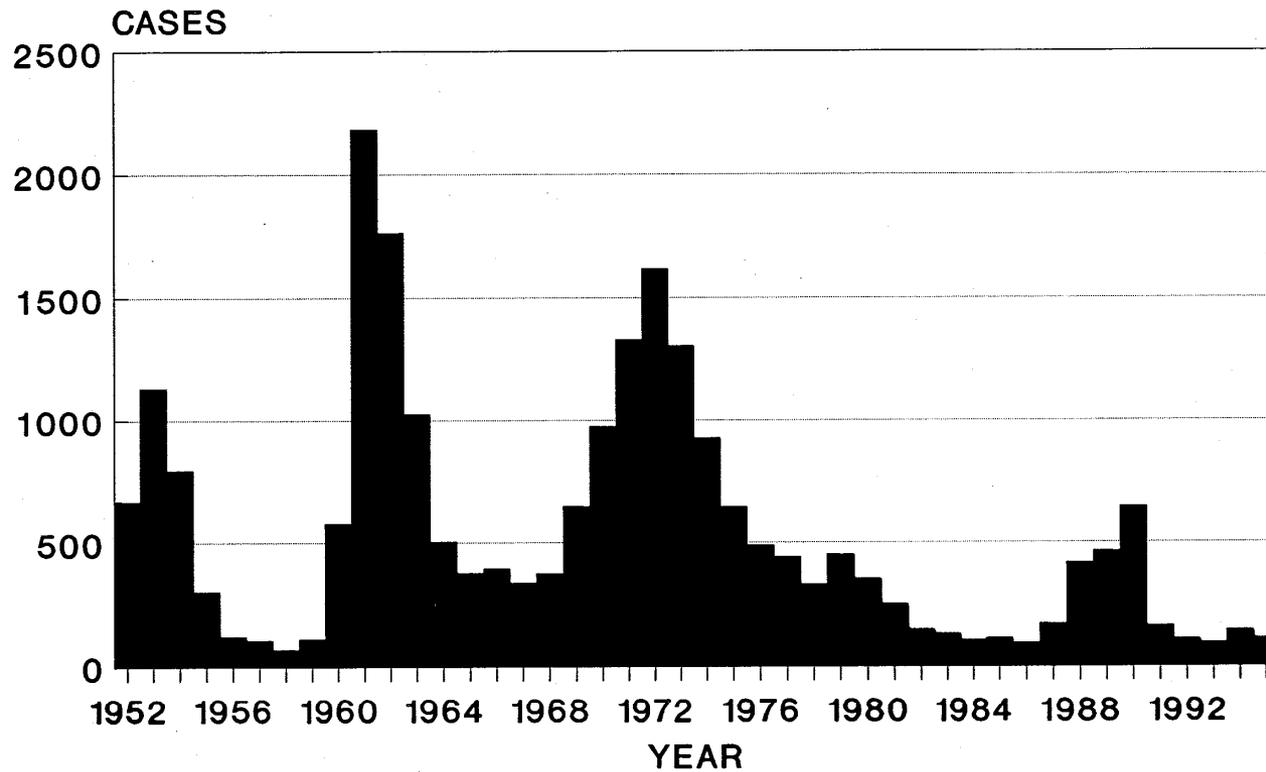
Reported cases, North Carolina, 1991-2005



Hepatitis B, acute – North Carolina 1991-2005 - Incidence rate by Age Group



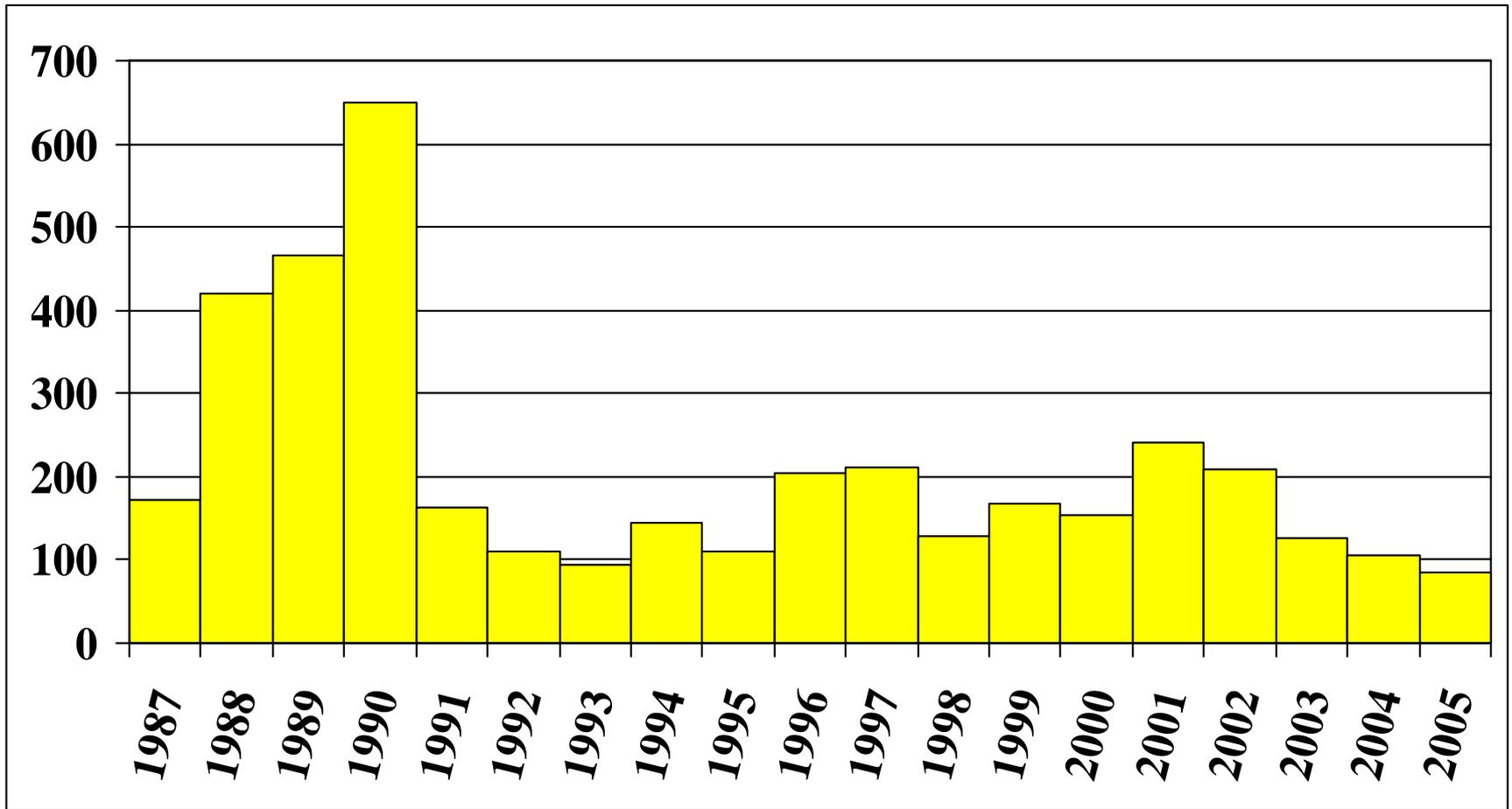
HEPATITIS A, NC 1952-1995



SOURCE: COMMUNICABLE DISEASE
CONTROL SECTION, NCDEHNR

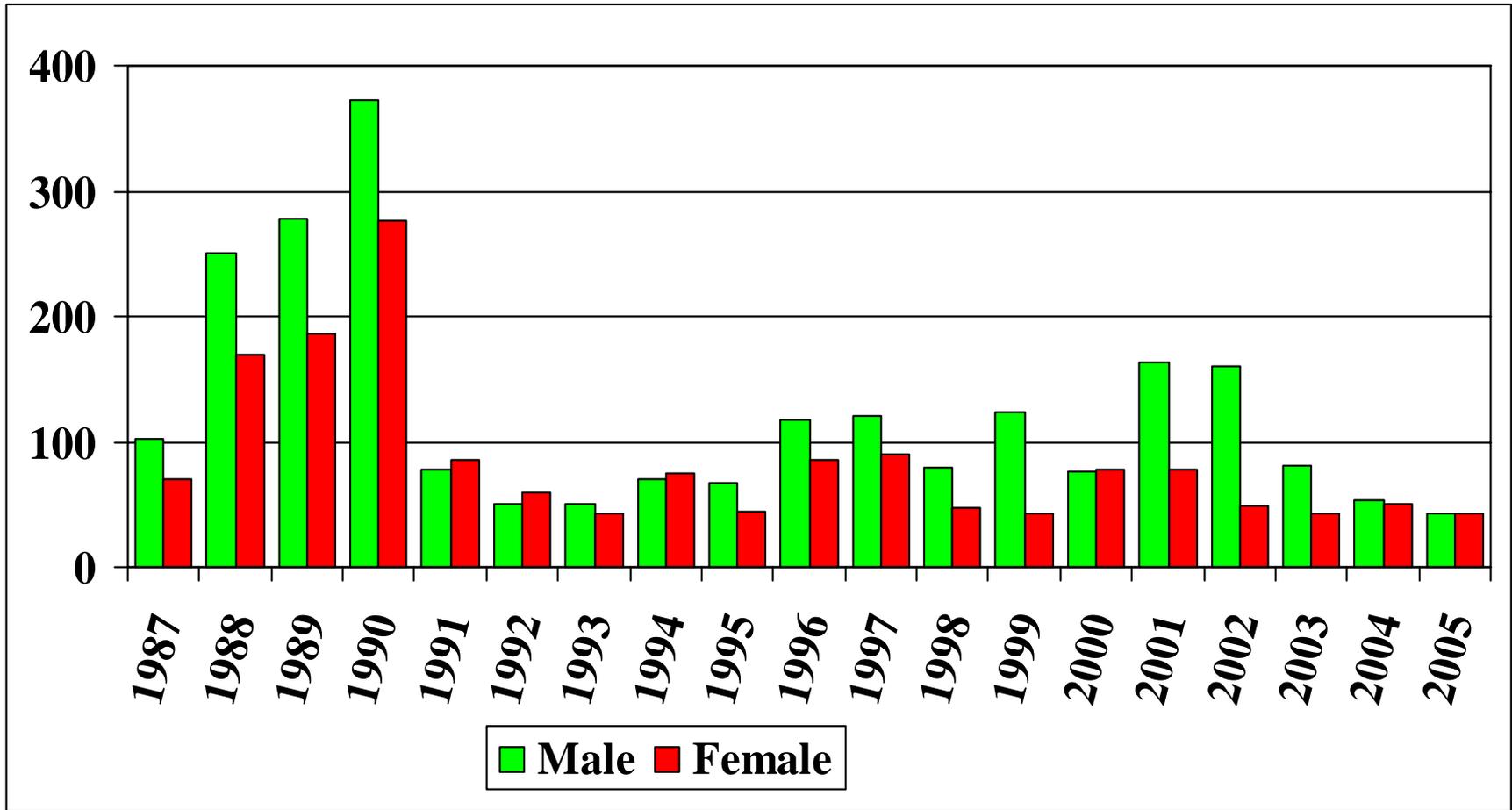
Hepatitis A - NC, 1987-2005

(N=3,958)

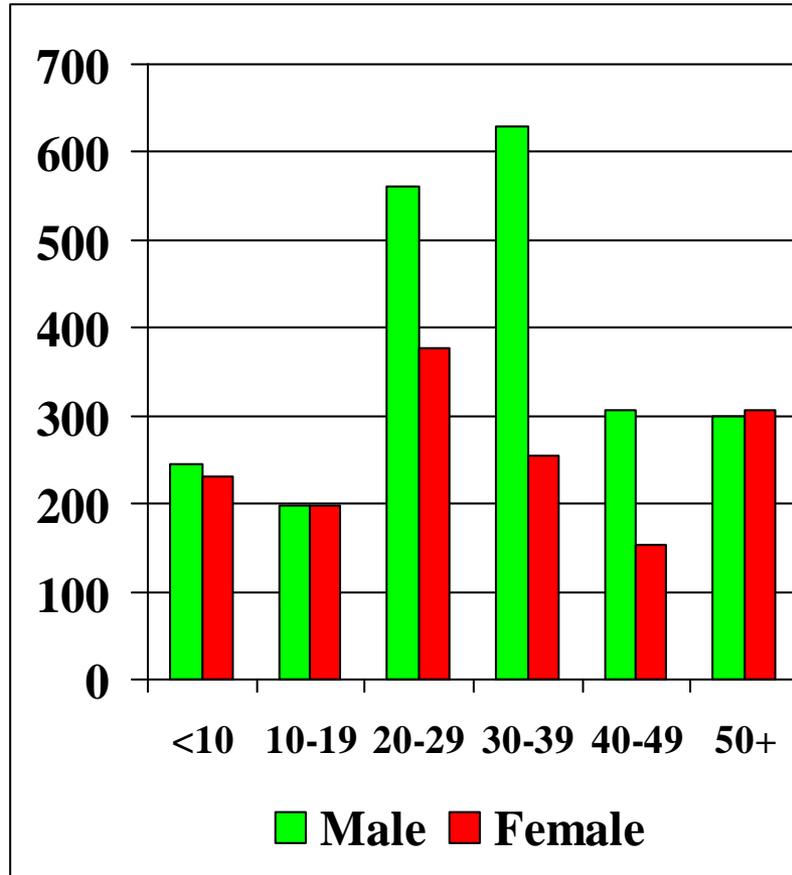


Hepatitis A - NC, 1987-2005

(N=3,958)



Hepatitis A-by gender and age group

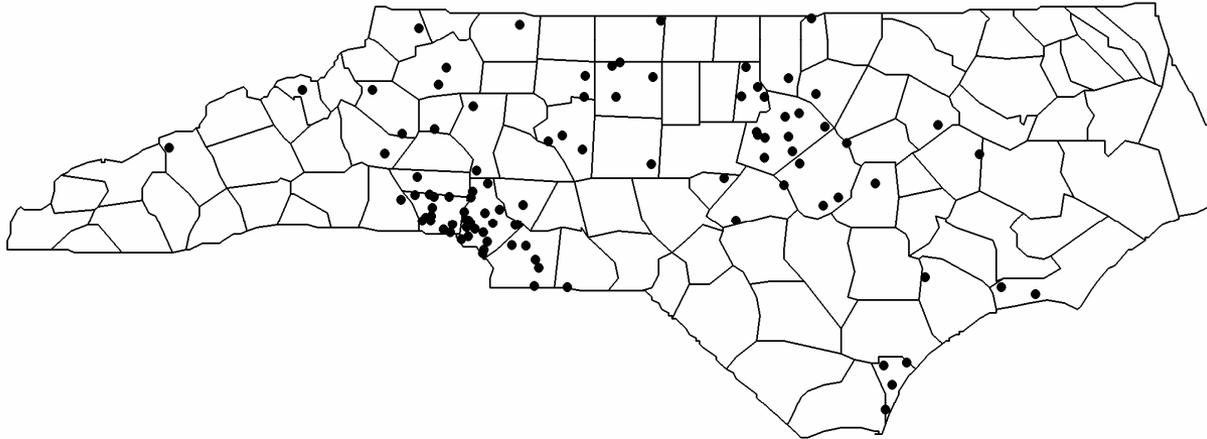


NC, 1987-2003; N=3,767 (2,243 M, 1,524 F)

- Foodborne
- Person-to-person
- Gender distribution: Male>Female (60%-40%)
- Age/Gender distribution: Young Males, 20-39 y.o.
- MSM at high risk for hepatitis A

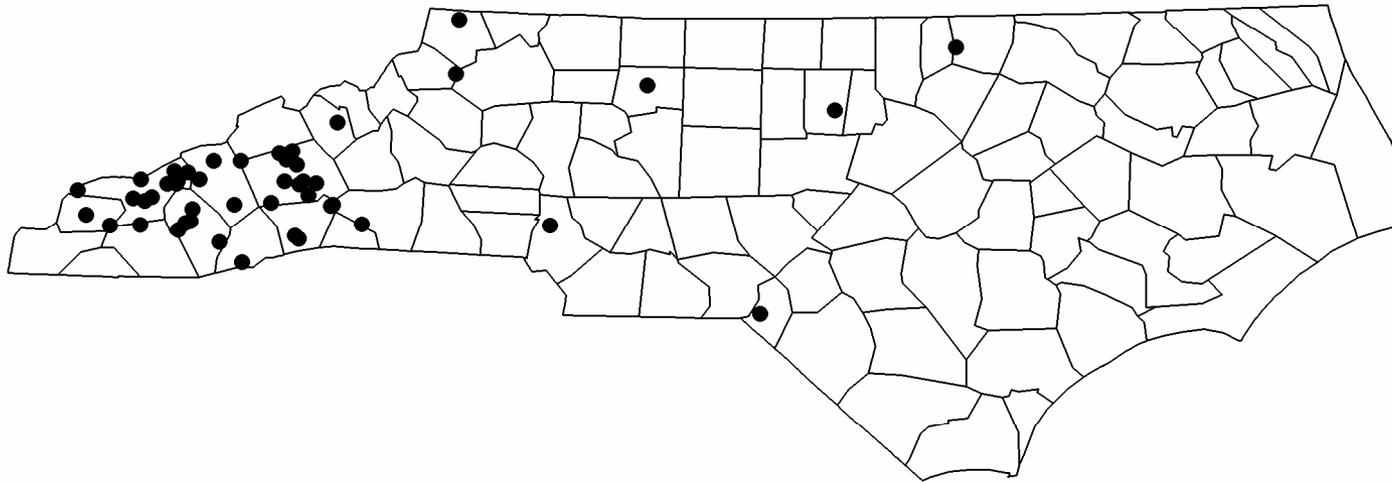
Salmonella enteritidis

Salmonella enteritidis
JUNE–AUGUST 2001 Collection dates
Source: NC–SLPH
(N = 103)



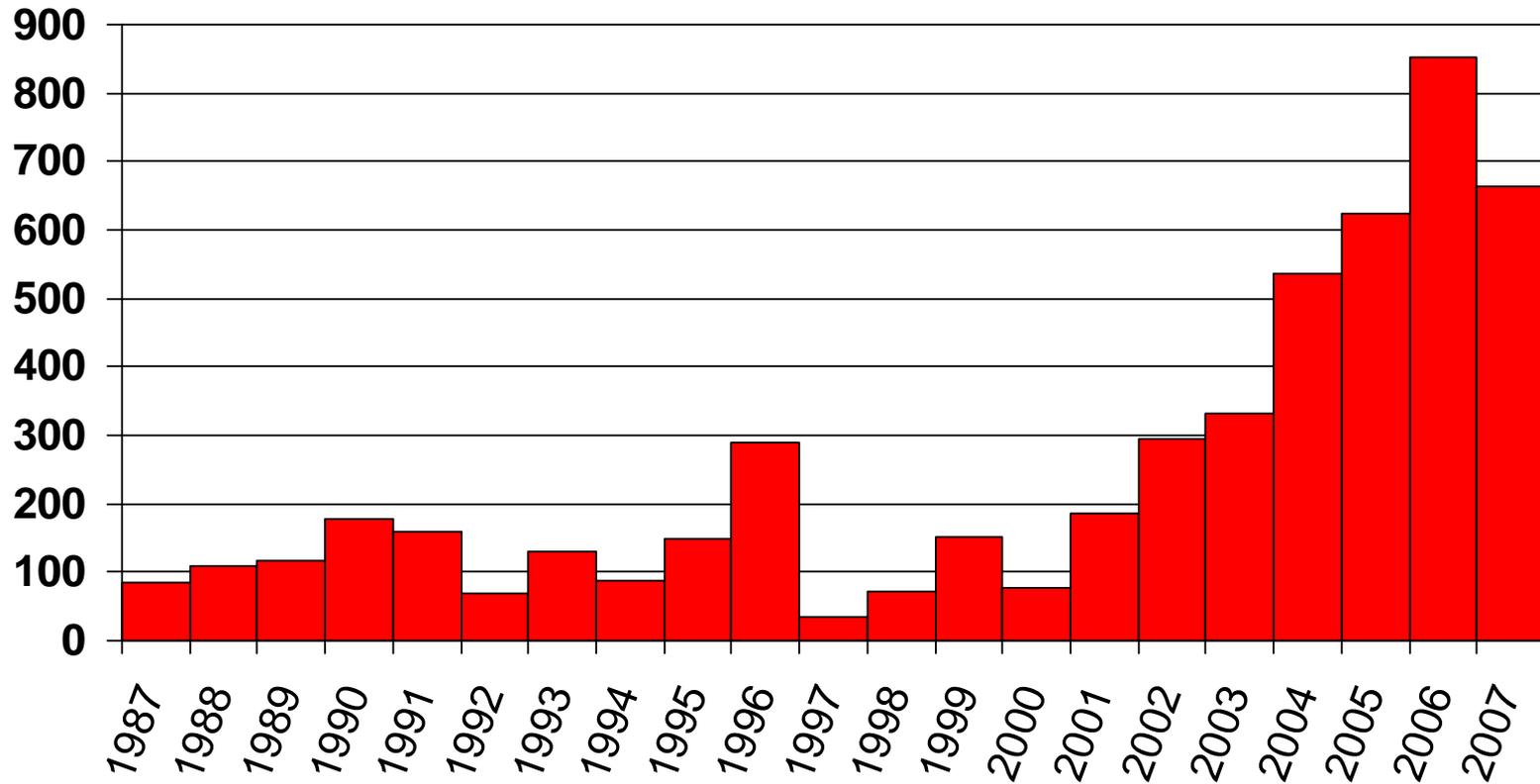
LaCrosse Encephalitis

LaCrosse Encephalitis, NC Reported Cases
By Patient County of Residence
1997-2002 (N=47)

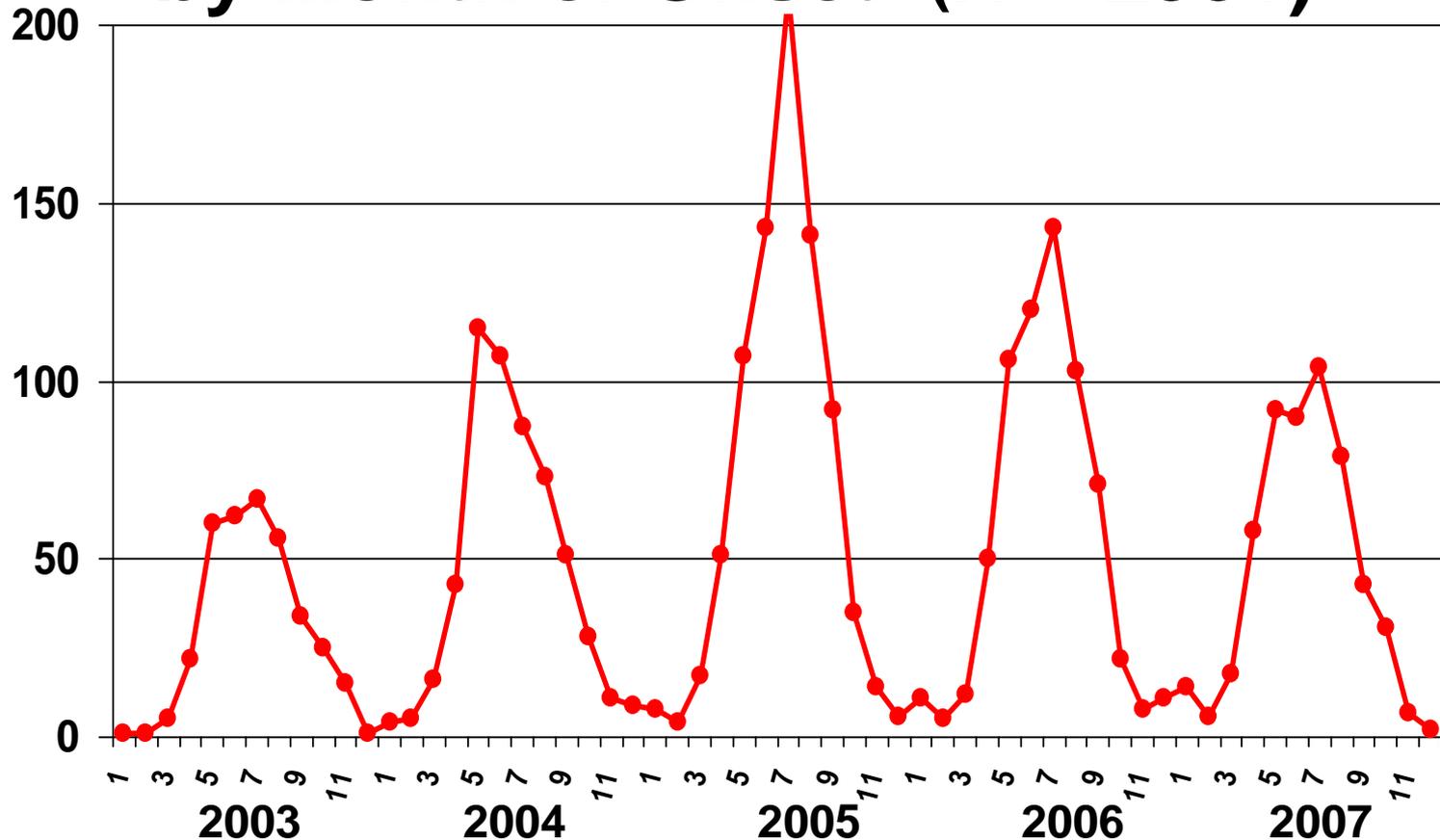


RMSF, NC

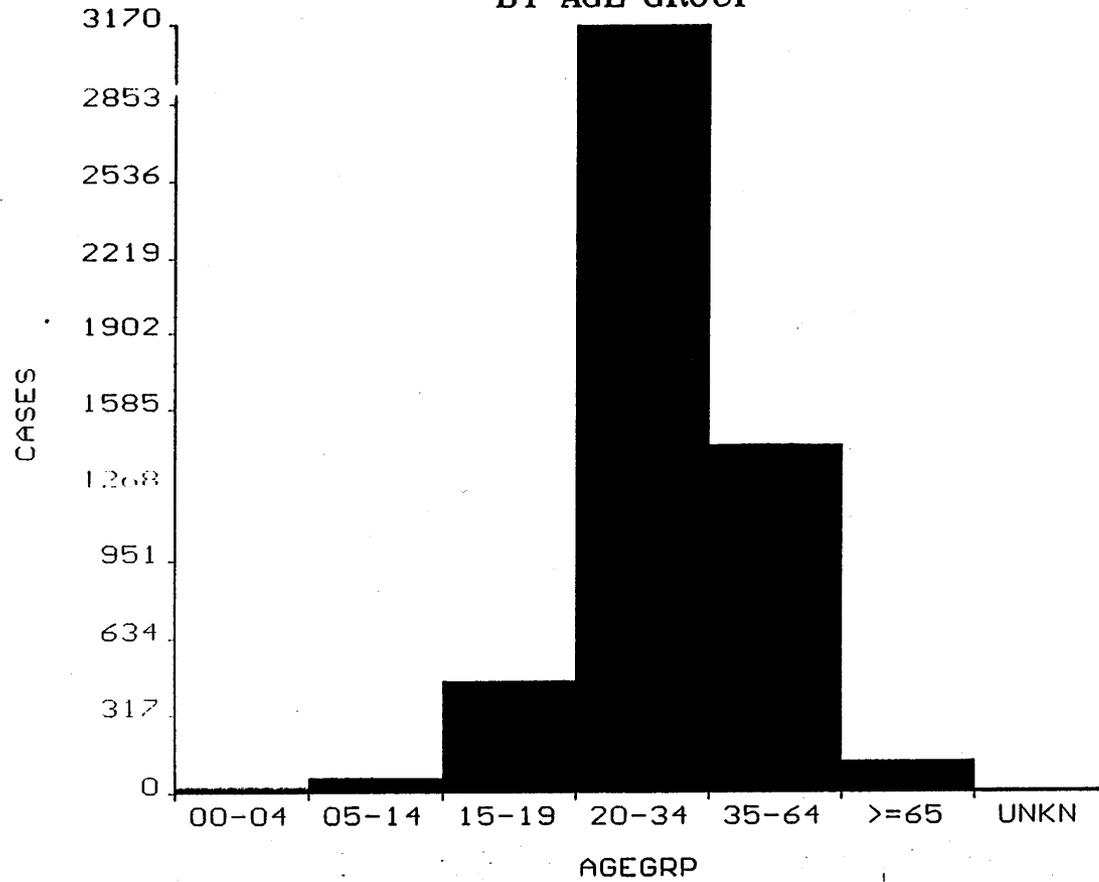
Reported Cases, by Year of Report



Rocky Mountain Spotted Fever Reported Cases, NC, 2003-2007 by Month of Onset (N = 2931)

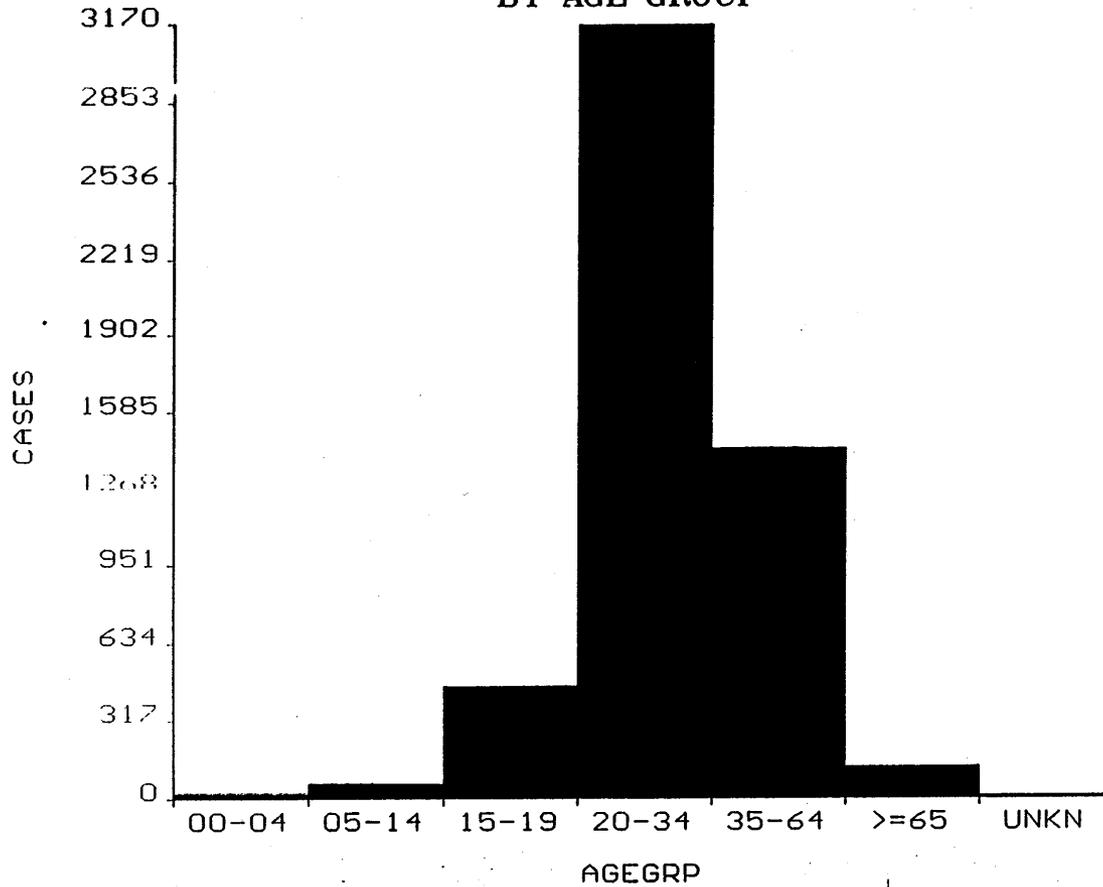


REPORTED CASES, NC, 1988-1994
BY AGE GROUP

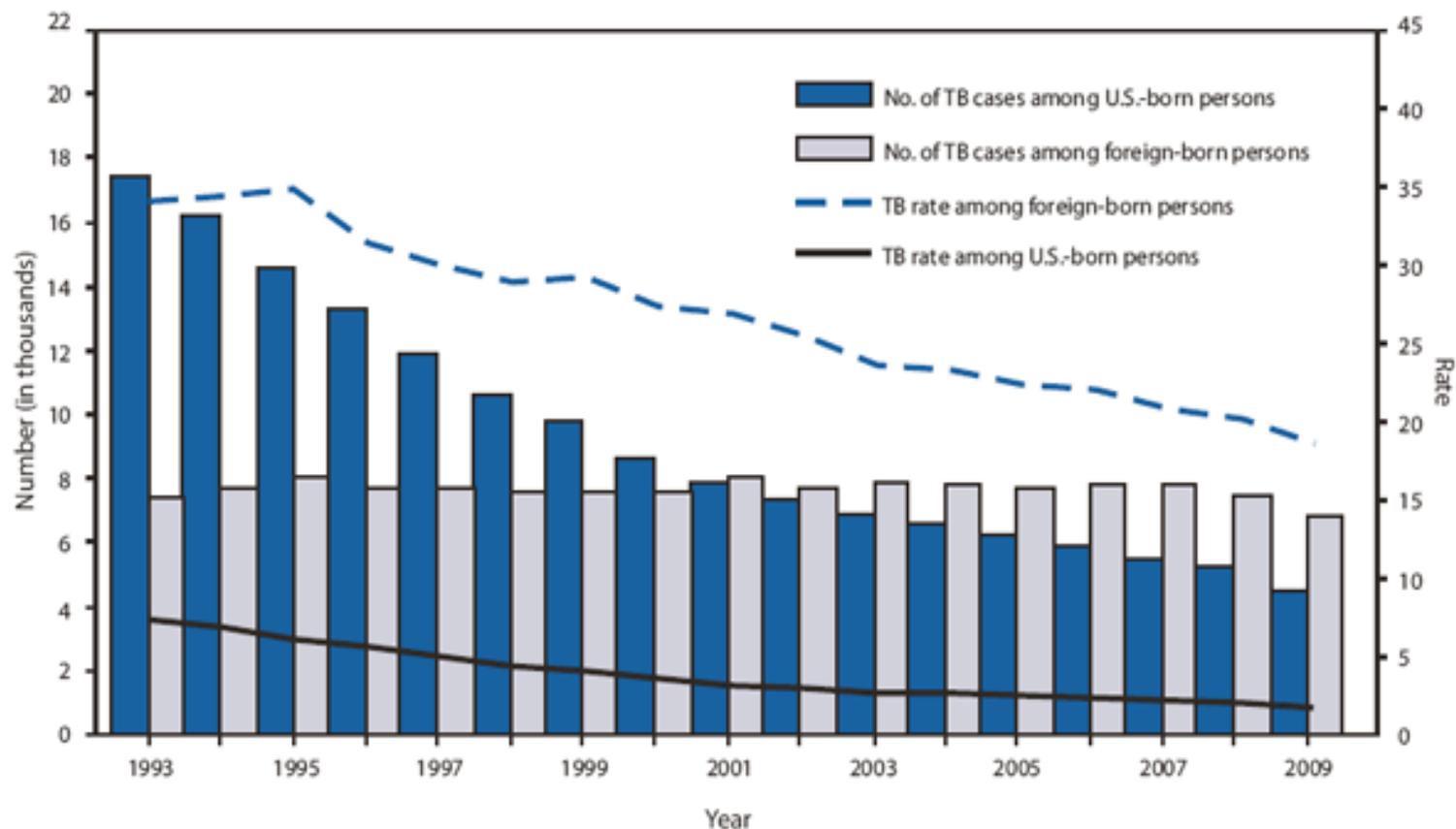


Hepatitis B Acute

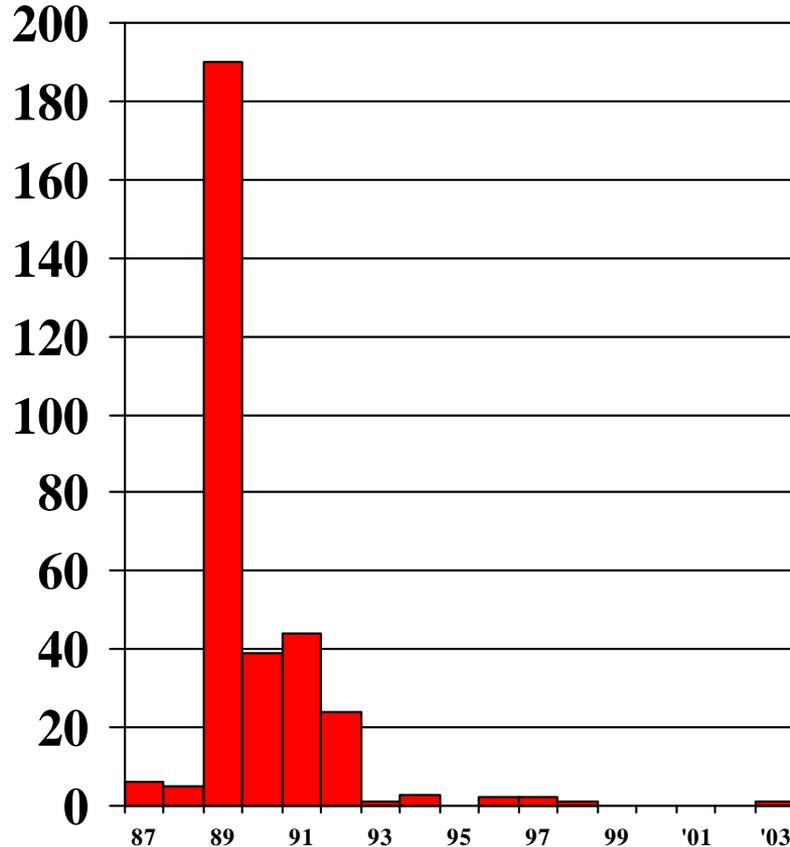
HEPATITIS B ACUTE
REPORTED CASES, NC, 1988-1994
BY AGE GROUP



Number and rate (per 100,000) of tuberculosis cases among U.S.-born and foreign-born persons, by year reported – U.S., 1993-2009



Measles – NC 1987-2003



N=318 Reported Cases - NC 1987-2003

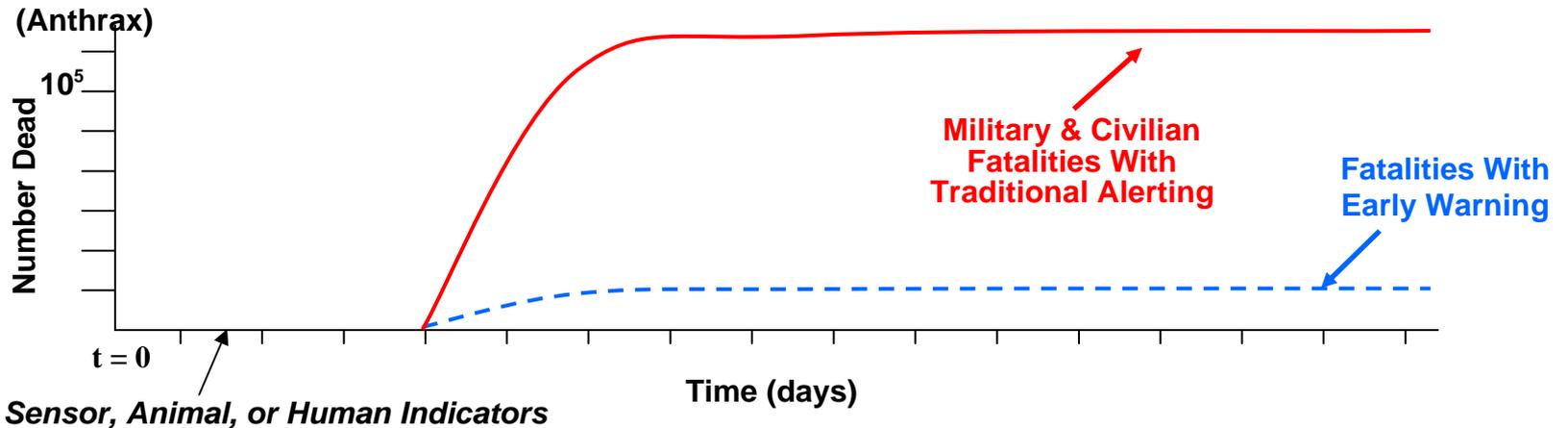
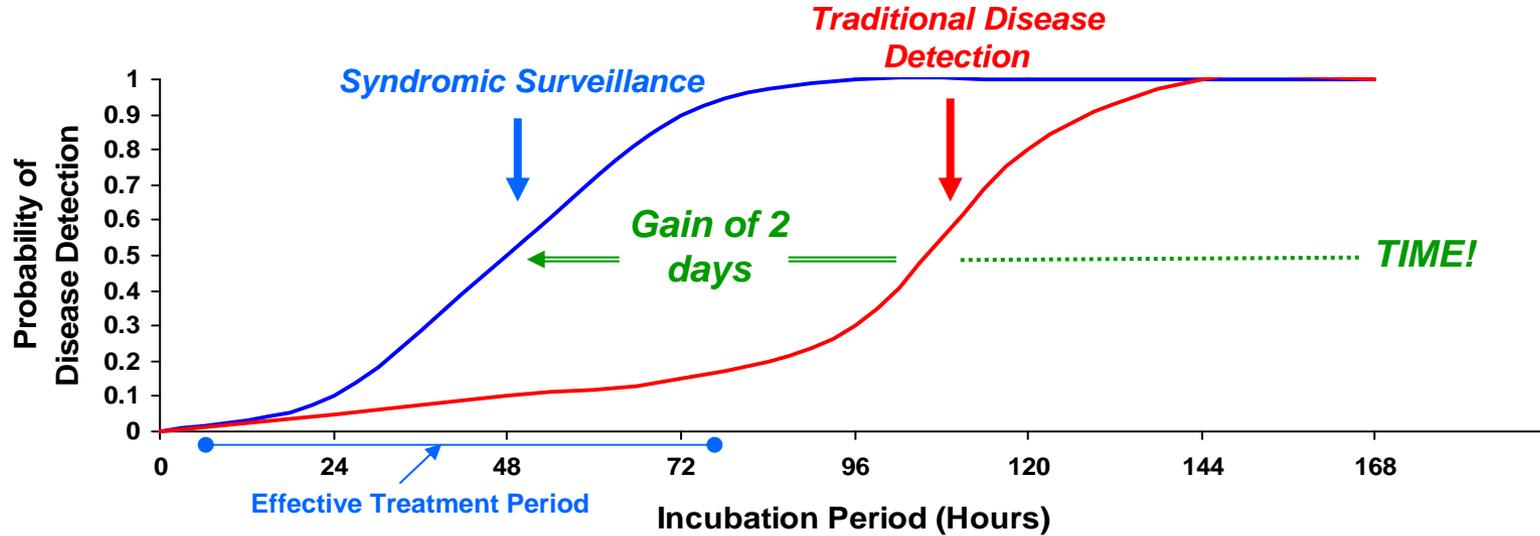
- A vaccine preventable disease
- A childhood disease
- Background rate: ~ 0
- 1989 Outbreak:
 - Atypical age:
 - 19% aged < 10 y.o.
 - 76% aged 10-24 y.o.
- Use: Policy changes

Surveillance: Recent Trend

- Electronic reporting
- Reporting of events providing earlier warning
- Healthcare-Associated Infection

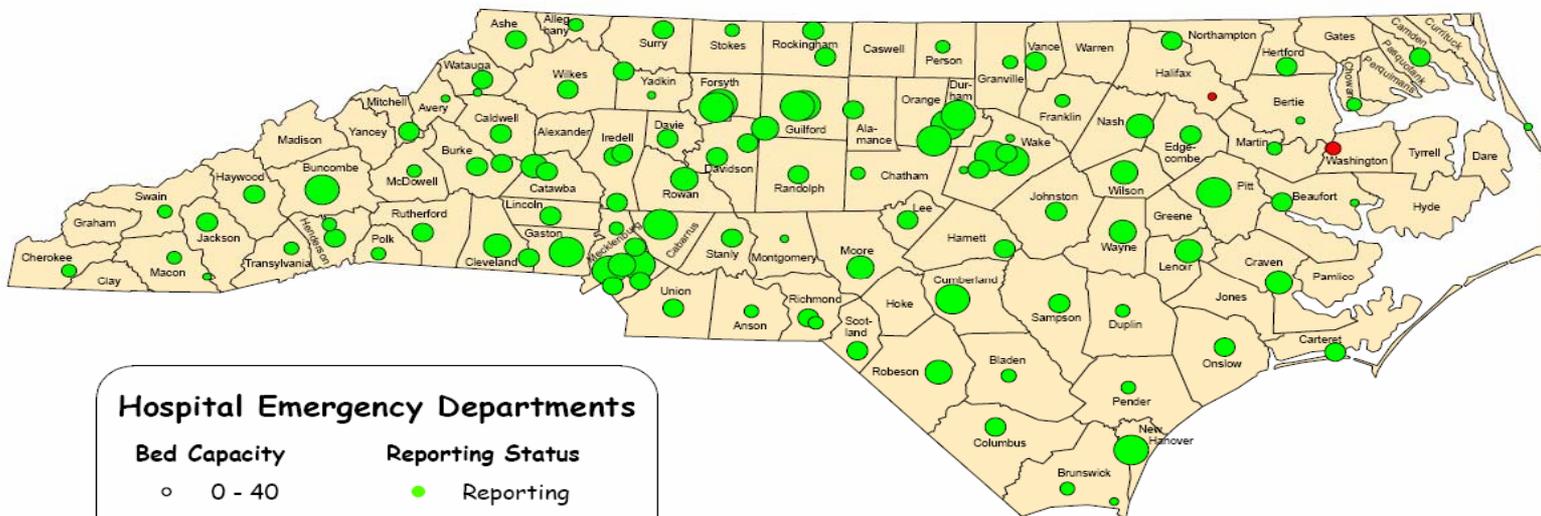
Syndromic/Electronic Surveillance

Traditional vs. Indicator Surveillance in Outbreak Detection



Source: Johns Hopkins University / DoD Global Emerging Infections System

Hospital Emergency Departments Reporting to NC DETECT by General Bed Capacity As of April 30, 2008 (110 hospitals reporting)



Hospital Emergency Departments

Bed Capacity	Reporting Status
○ 0 - 40	● Reporting
○ 41 - 70	● Not Reporting
○ 71 - 110	○ County
○ 111 - 300	
○ more than 300	

Hospital ED data shared with BioSense for national surveillance

