

# HIGH-RISK FOODS AND DATA INTEGRATION

Caroline Smith  
DeWaal  
Food Safety  
Director  
Feb. 1, 2012



# CSPI: FOUR DECADES OF CONSUMER ADVOCACY

- Bi-national consumer advocacy organization founded in 1971 by Michael Jacobson, Ph.D.
  - Focuses on nutrition and health, and food safety
  - Publishes award-winning *Nutrition Action Healthletter*
  - Represents over 900,000 subscriber/members in the United States and Canada



# OVERVIEW

- World Health Organization/AGISAR Surveillance Model
- U.S. Data Sources
- Utility of Outbreak Data
- Linking *Salmonella* serotype data in food to human illness
  - What existing data sets tell us
  - Is it predictive, either long-term or short-term?

# WHO MODEL

The WHO model for surveillance looks at pathogens at three points in the food chain.

- Pathogens in the animal population
  - Broilers, Turkeys
  
- Pathogens in the retail meat sector
  - Ground meat, retail samples
  
- Public health (outbreaks/cases)
  - Cases linked to outbreaks/FoodNet cases

# U.S. DATA SOURCES

- **FSIS PR/HACCP testing**
  - Broilers, ground chicken, turkey, ground turkey
- **FDA NARMS retail testing**
  - Chicken breast, ground turkey
- **CDC FoodNet**
  - 15% of U.S. population under active surveillance, captures cases of foodborne illness
- **CSPI Outbreak Alert**

# CSPI'S OUTBREAK ALERT!

- Over 6,800 outbreaks between 1990-2009
- Using CDC's Foodborne Outbreak Online Database (FOOD), CSPI maintains a database of those foodborne illness outbreaks with an **identified** etiology and food vehicle.
- Outbreaks in the CSPI database are indexed into one of thirteen food categories. Each category is then subdivided into food types.

# FOOD CATEGORIES IN OUTBREAK ALERT!

## FDA-Regulated Food

- ❖ Beverages
- ❖ Breads & Bakery
- ❖ Dairy
- ❖ Eggs & Egg Dishes
- ❖ Game
- ❖ Multi-Ingredient Foods (No-Meat)
- ❖ Produce
- ❖ Seafood

## USDA-Regulated Food

- ❖ Beef
- ❖ Pork
- ❖ Poultry
- ❖ Luncheon & Other Meats

## Both

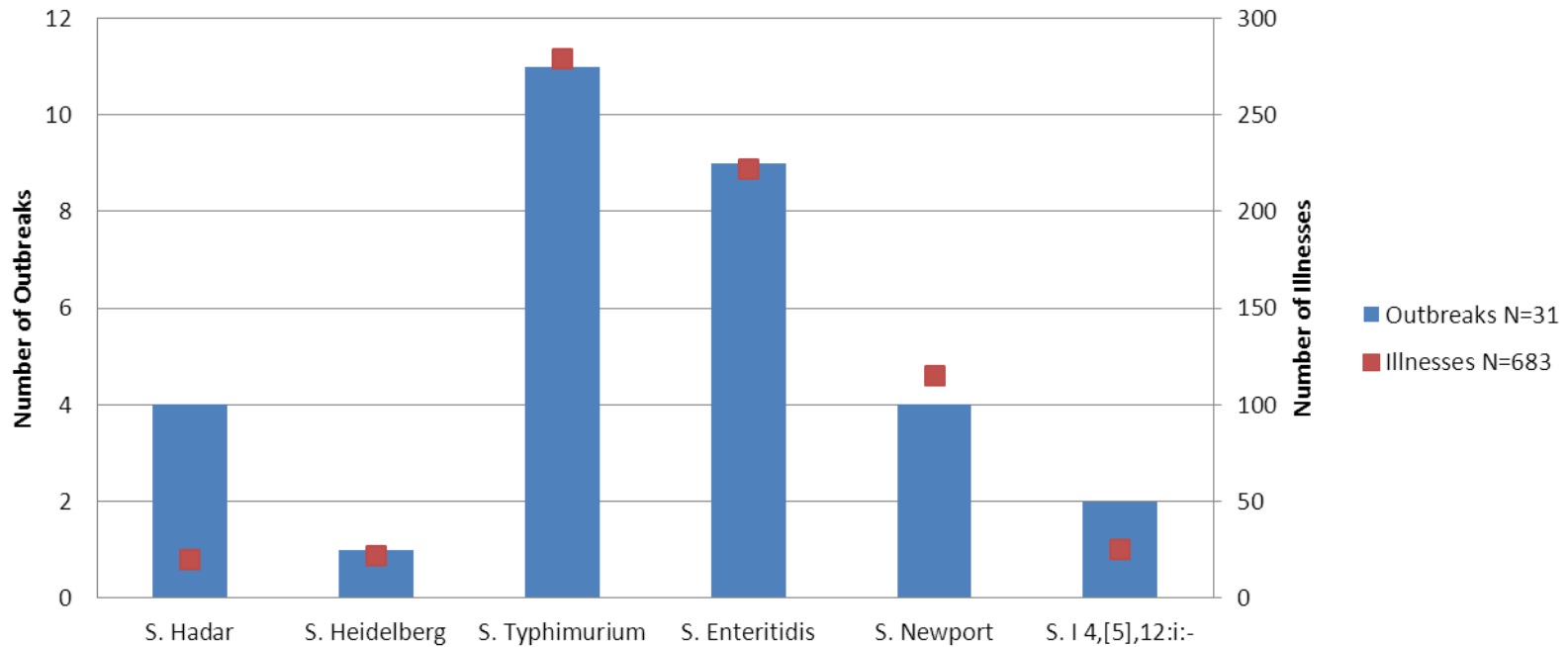
# METHODOLOGY

- Analyzed 3 years of data, 2006-2008
- FSIS PR/HACCP testing – Lists top 10 serotypes for each year
  - Looked at serotypes of public health import (excluded S. Kentucky)
- FDA NARMS retail testing – looked at overall *Salmonella* prevalence data
- CDC FoodNet – Lists top 20 serotypes for each year, does not include food attribution

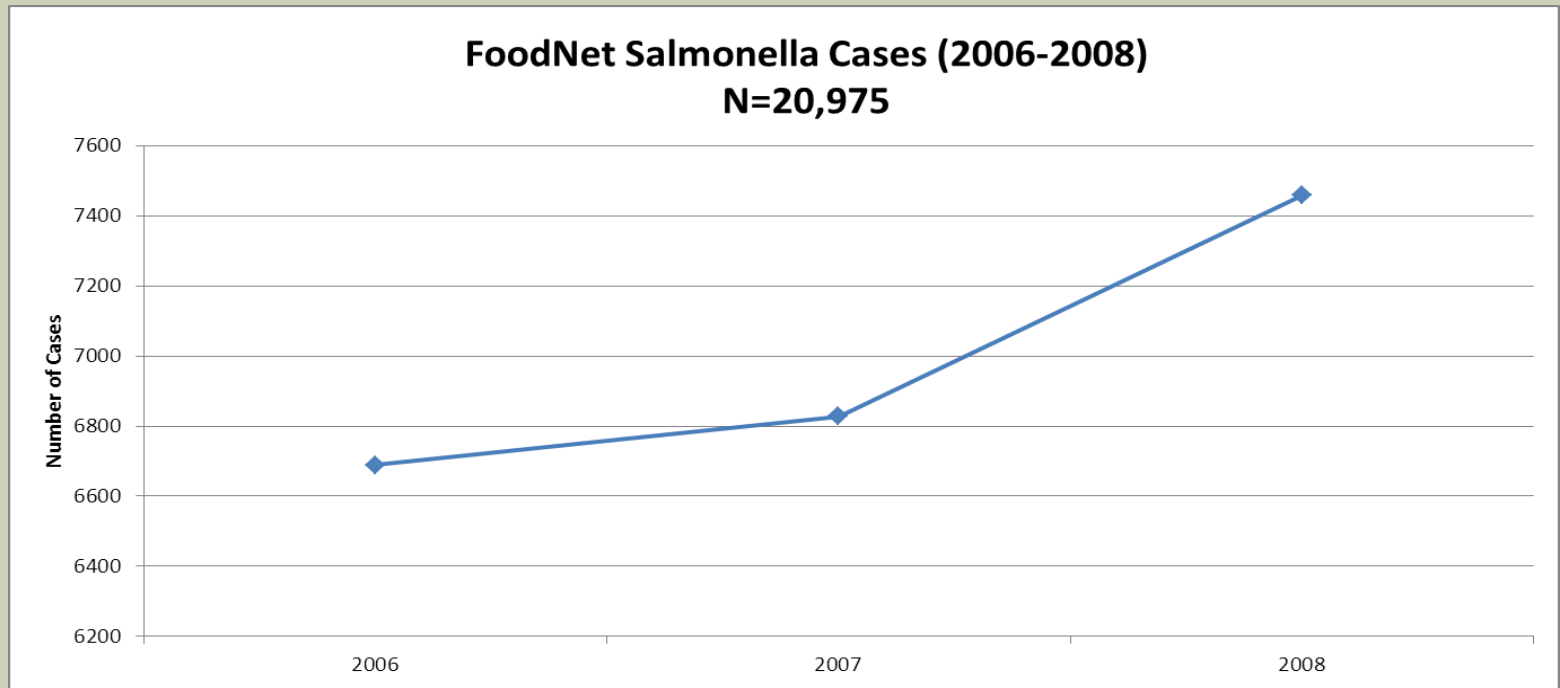


# POULTRY OUTBREAKS IN THE U.S.

Number of Outbreaks and Illnesses from Poultry  
Outbreak Alert! Data 2006-2008

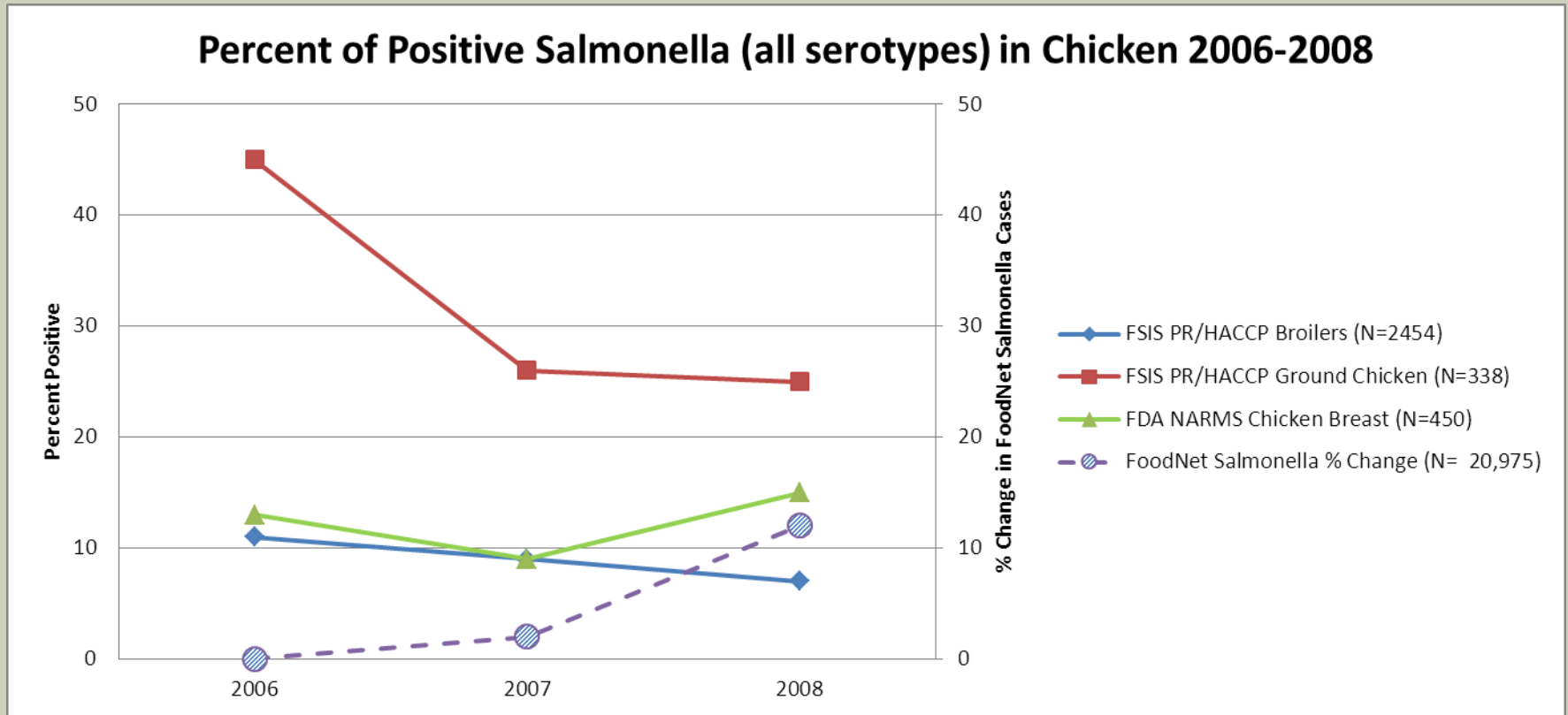


# FOODNET DATA 2006-2008



Note: FoodNet data has no food attribution

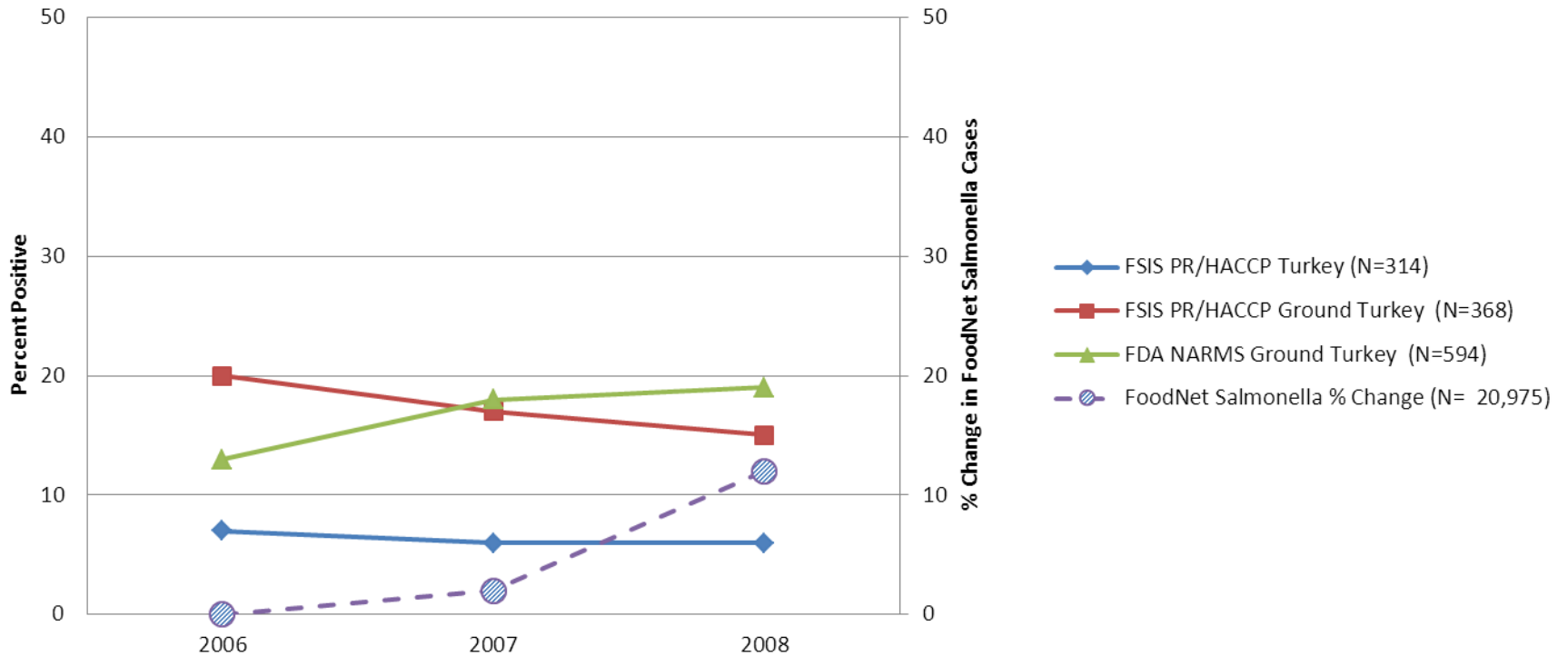
# SALMONELLA IN CHICKEN 2006-2008



Note: FoodNet data has no food attribution

# SALMONELLA IN TURKEY 2006-2008

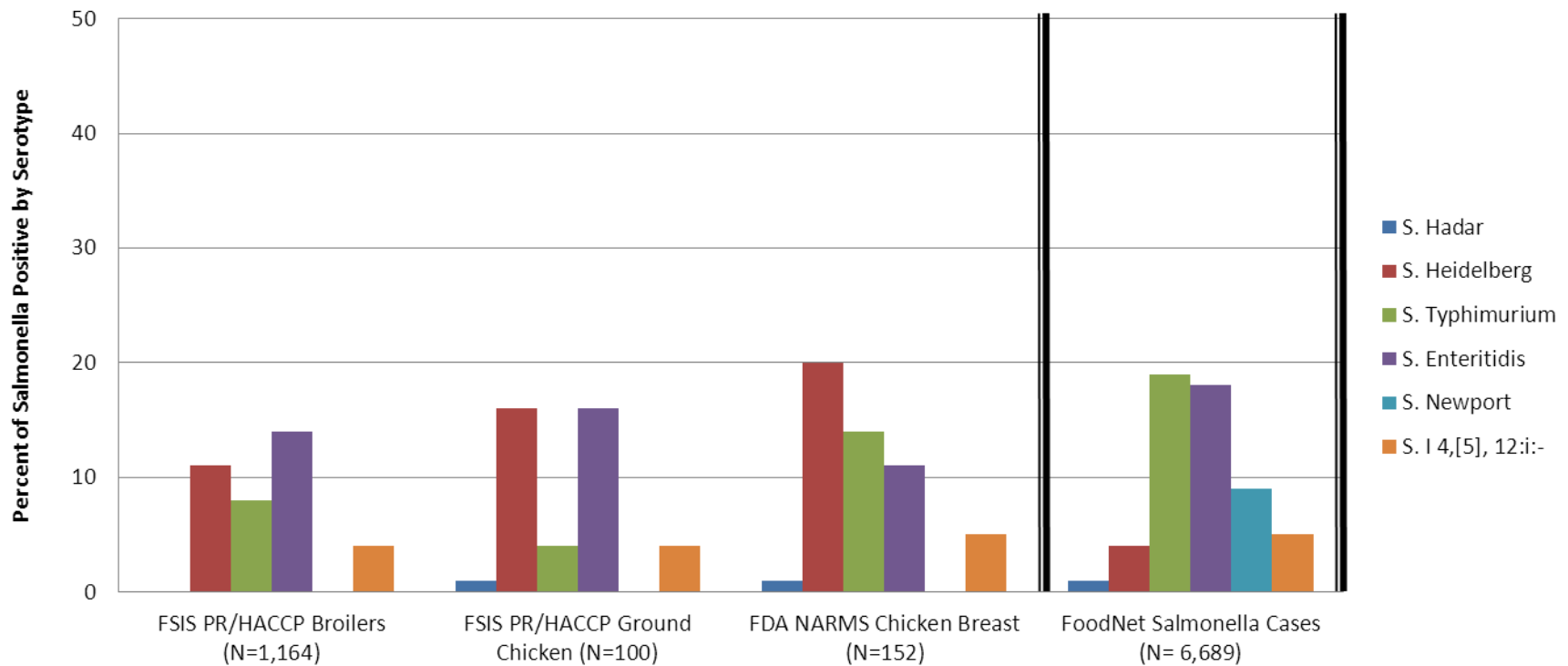
## Percent of Positive Salmonella (all serotypes) in Turkey 2006-2008



Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN CHICKEN 2006

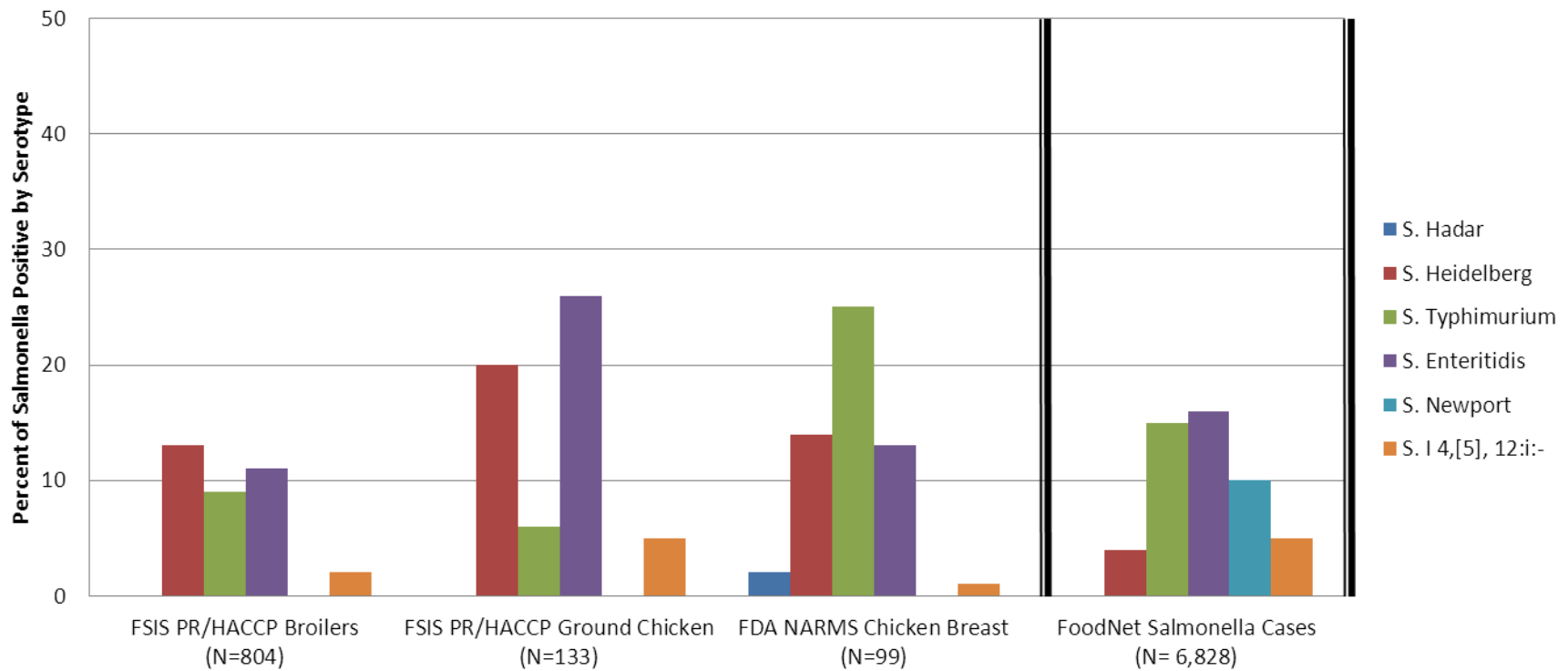
## Chicken - Percent of Total Salmonella Serotypes 2006



Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN CHICKEN 2007

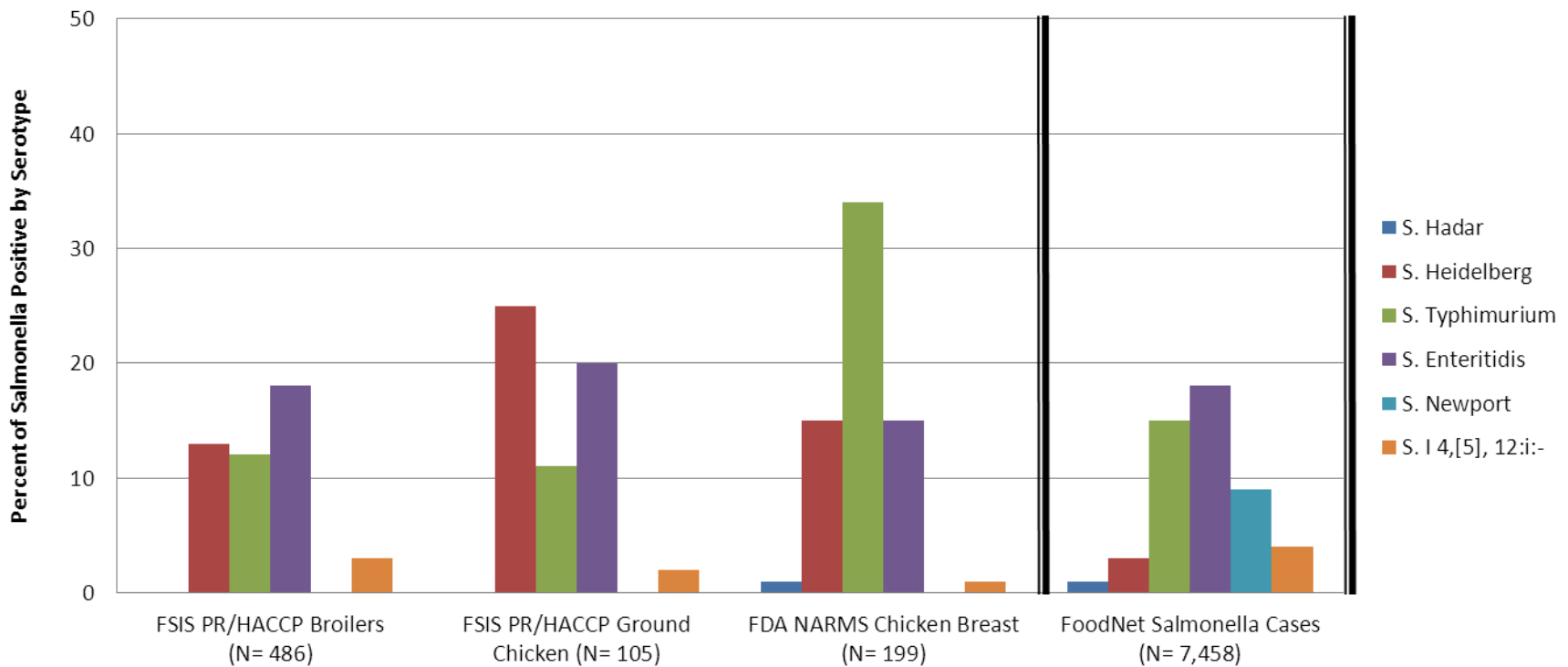
Chicken - Percent of Total Salmonella Serotypes 2007



Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN CHICKEN 2008

## Chicken - Percent of Total Salmonella Serotypes 2008



Note: FoodNet data has no food attribution

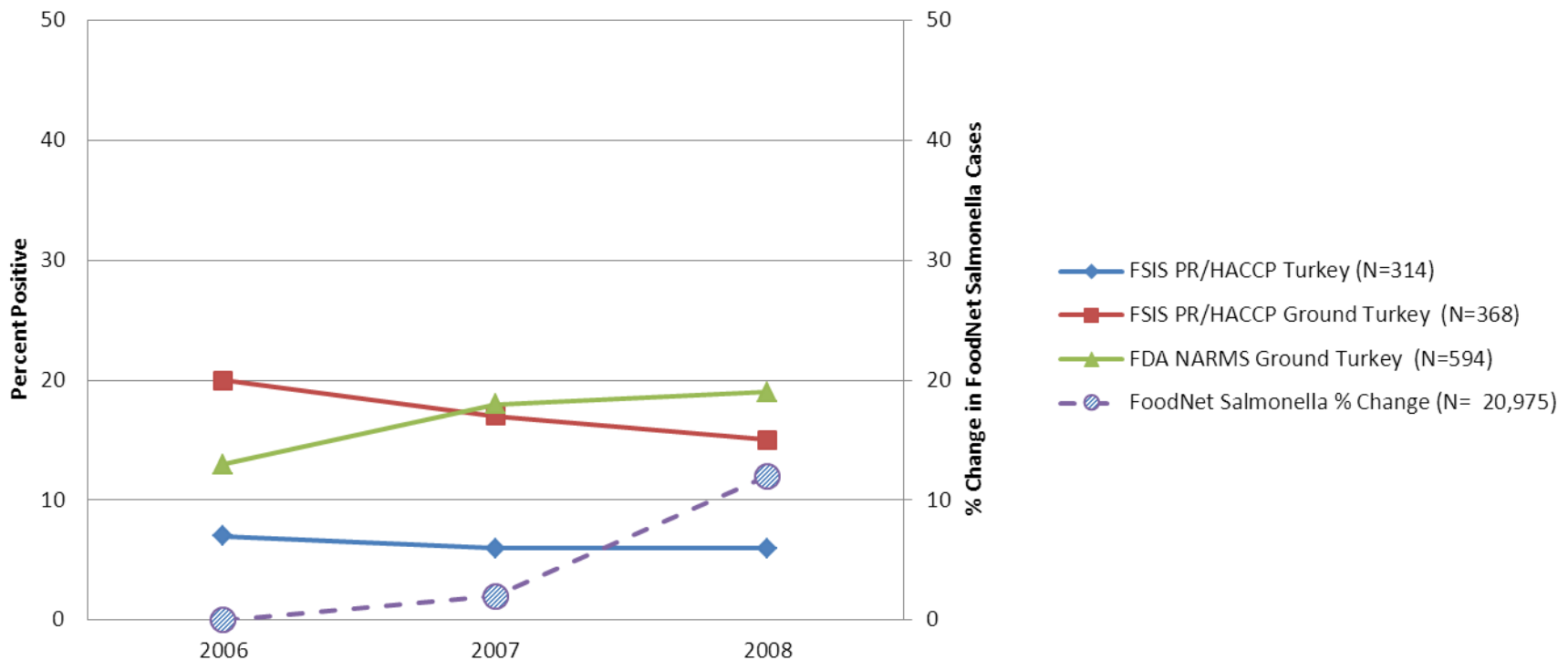
# CONCLUSIONS - CHICKEN

- Dominant serotypes in chicken samples are **S. Enteritidis, S. Heidelberg**
- Serotype most dominant in chicken at retail is **S. Typhimurium, S. Heidelberg**
- The dominant strain causing human illnesses (captured in the FoodNet data) are **S. Enteritidis, S. Typhimurium**



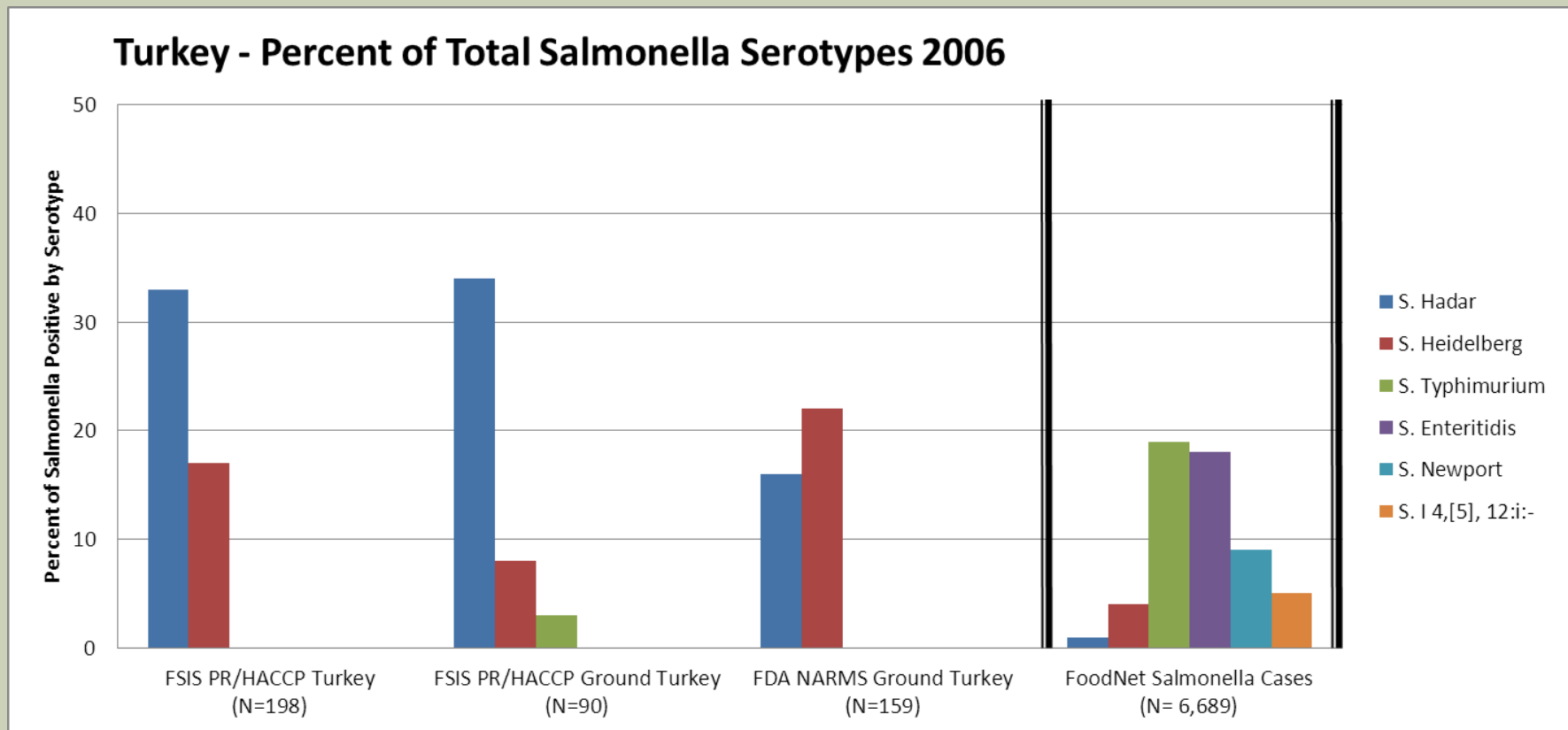
# SALMONELLA IN TURKEY 2006-2008

## Percent of Positive Salmonella (all serotypes) in Turkey 2006-2008



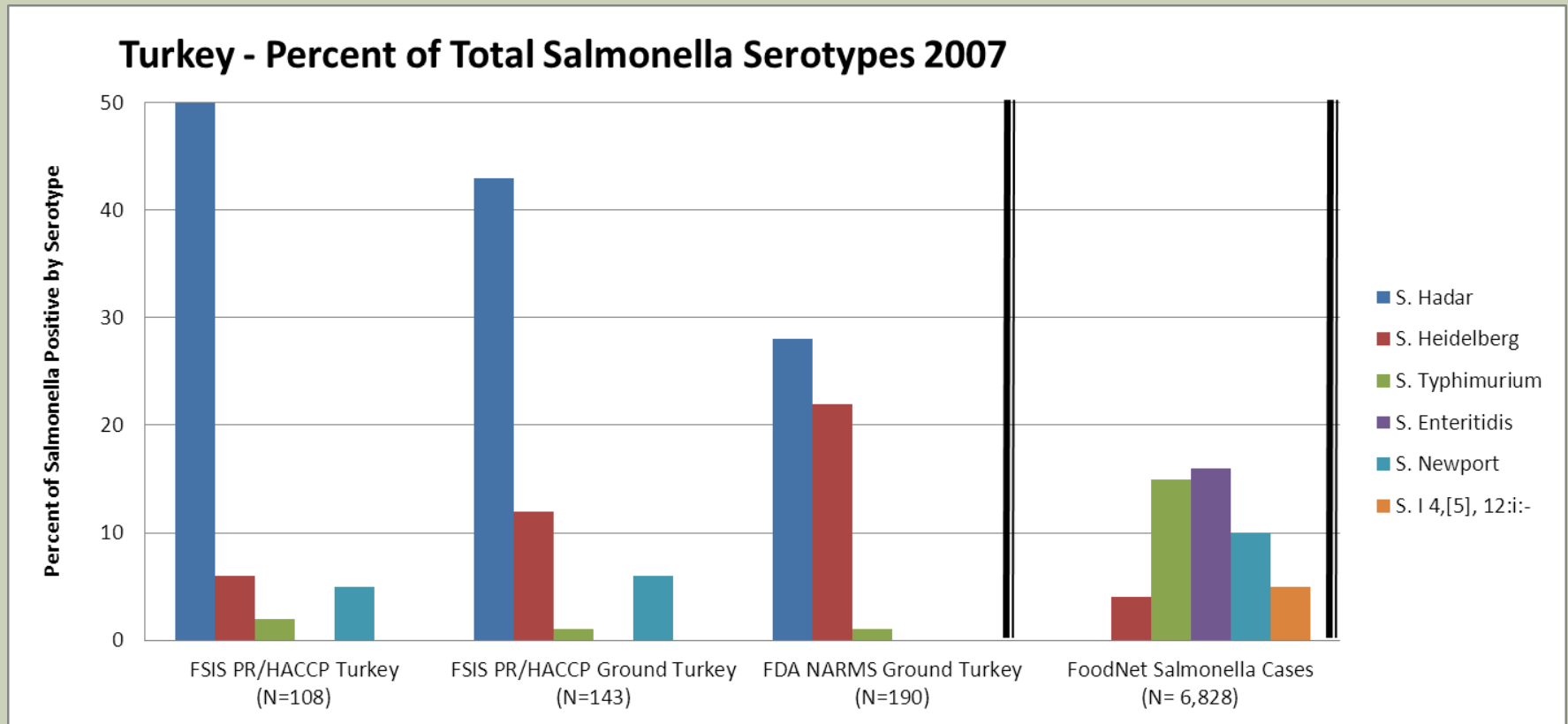
Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN TURKEY 2006



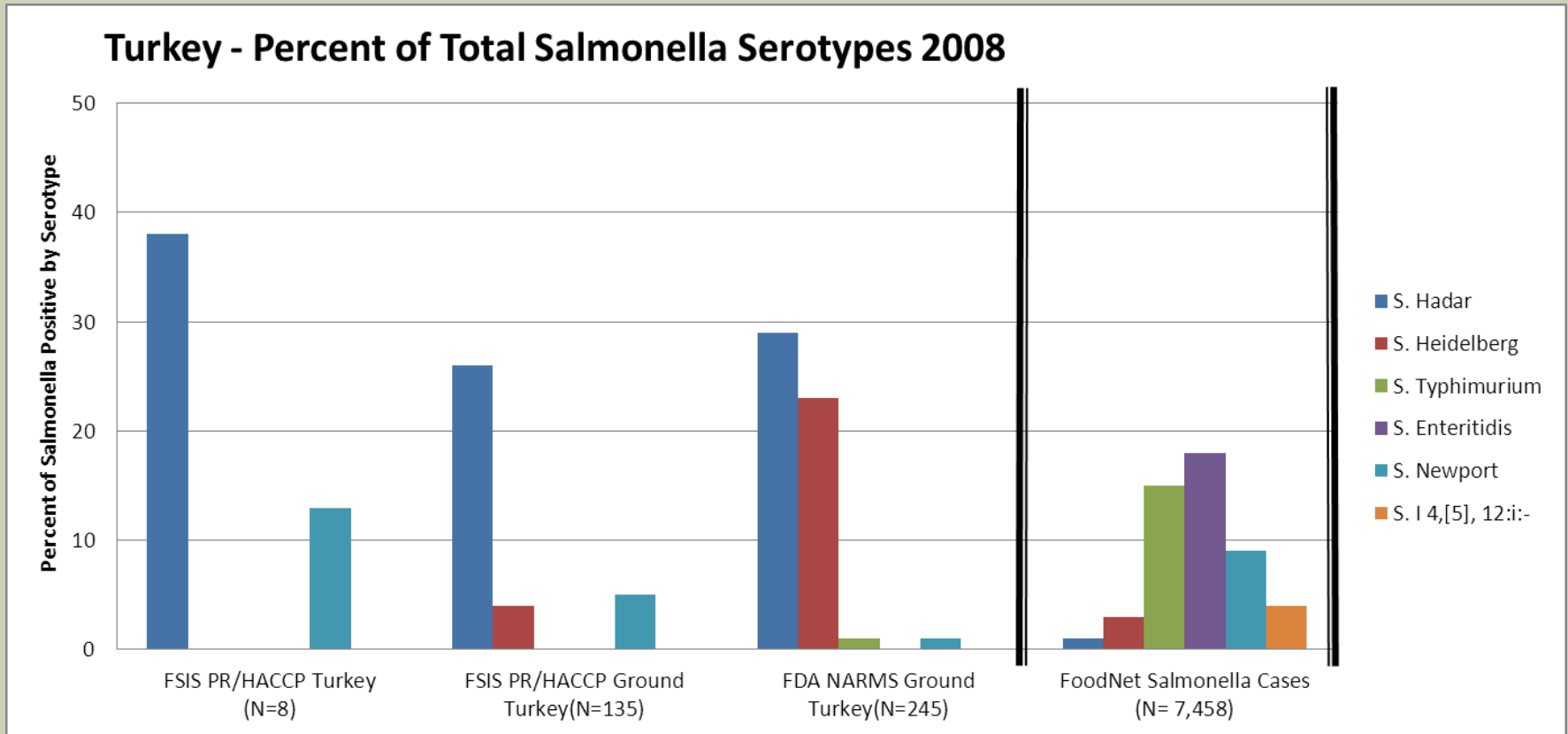
Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN TURKEY 2007



Note: FoodNet data has no food attribution

# SALMONELLA SEROTYPES IN TURKEY 2008



Note: FoodNet data has no food attribution

# CONCLUSIONS - TURKEY

- The dominant serotype in turkey samples is **S. Hadar**
- The serotypes most dominant in turkey at retail are **S. Hadar, S. Heidelberg**
- The dominant serotypes causing human illnesses (captured in the FoodNet data) are **S. Enteritidis, S. Typhimurium**

# A CAUTIONARY NOTE: RECENT ANTIBIOTIC-RESISTANT SALMONELLA OUTBREAKS

- 2011 Multi-state outbreak of *S. Heidelberg* in ground turkey – ABR resistant
- 2011 Multi-state outbreak of *S. Hadar* in ground turkey – ABR resistant

## Other ABR outbreaks of interest

- 2011 Multi-state outbreak of *S. Typhimurium* in ground beef – ABR resistant
- 2009 Two multi-state outbreaks of *S. Newport* in ground beef – ABR resistant
- 2009 Multi-state outbreak of *S. Typhimurium* in ground beef – ABR resistant

# INCORPORATING FOOD TESTING DATA INTO FUTURE ANALYSIS

FDA is receiving new food testing data from industry as a result of recent legislation

- The Reportable Food Registry requires companies to report food contamination events to FDA when food has been released to the public
- FSMA requires laboratories to report certain food testing data to FDA
- FDA needs to develop a method of capturing this data and applying it as appropriate to anticipate existing and emerging hazards.
- IFSAC should consider methods to incorporate new sources of food testing data into its analysis

# Thank you!

**Caroline Smith DeWaal  
Food Safety Director  
Center for Science in the Public Interest  
1220 L St., NW Suite 300  
Washington, DC 20005**

**Phone: (202) 777-8364 Fax: (202) 265-4954  
E-mail: [cdewaal@cspinet.org](mailto:cdewaal@cspinet.org)**

**On the internet: [www.cspinet.org](http://www.cspinet.org) and  
[www.safefoodinternational.org](http://www.safefoodinternational.org)**

