Changing age structure of human campylobacteriosis in England and Wales

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Contents

- **Background**
  - Disease
  - Impact
  - Incidence
- **Study**
- **Impact and implications**
- **Potential causes?**

Organism

- **Small, gram negative bacteria**
- **Zoonotic**
- **Twelve species**
  - *C. jejuni*, *C. coli* & *C. fetus*
- **Exacting growth requirements**
  - optimally 5-7% O_2 and 10% CO_2 @ 42-43°C
- **Low infective dose for illness**

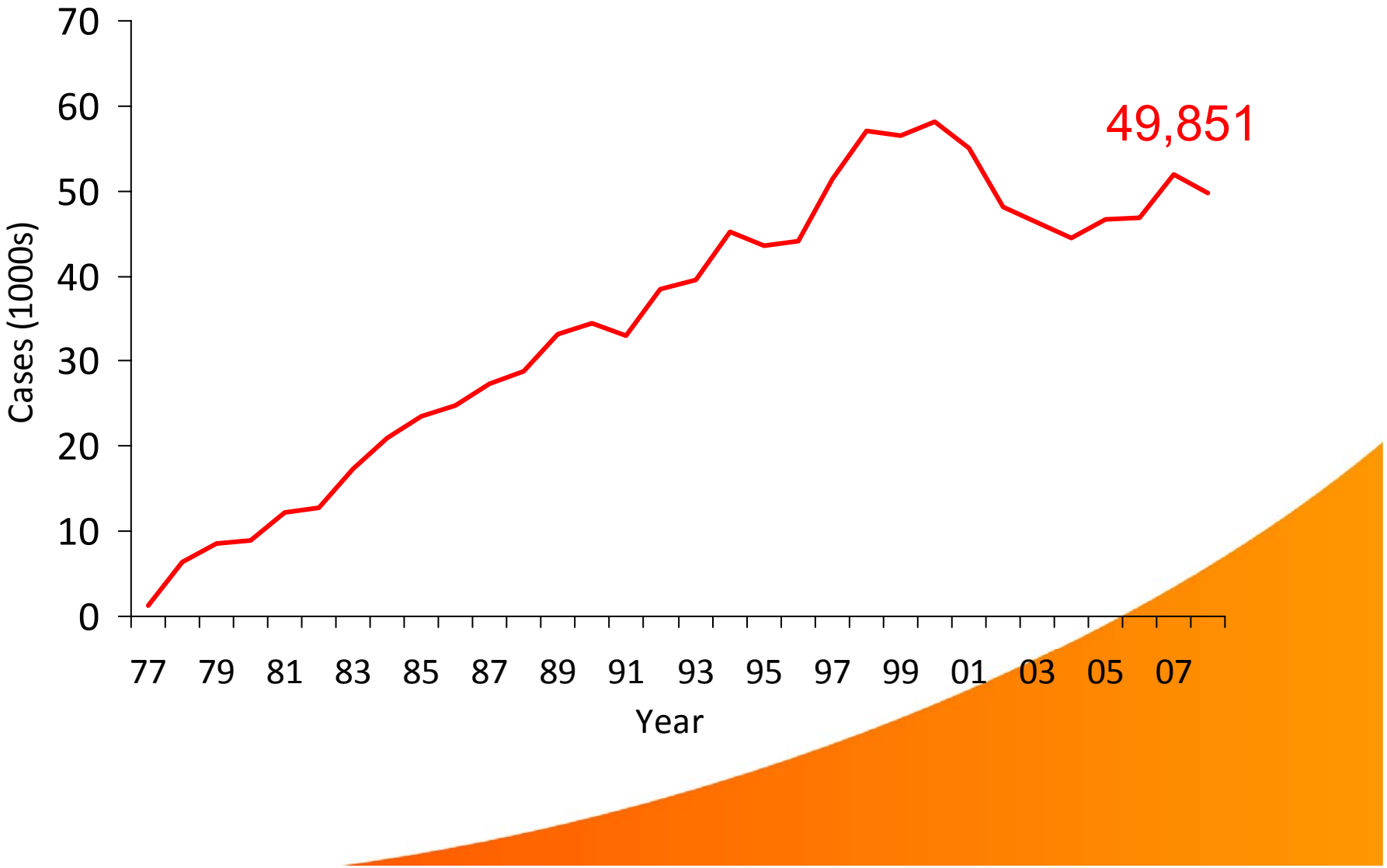
Disease

- **Acute enteritis**
  - Diarrhoea, malaise, abdominal pain and fever
- **Illness length**
  - Asymptomatic to several months; mean 12 days
- **Hospital admission**
  - ~10%
- **Sequelae**
  - Extraintestinal infections
    - Bacteraemia ~0.05%
    - Cholecystitis, pancreatitis, cystitis, meningitis and endocarditis

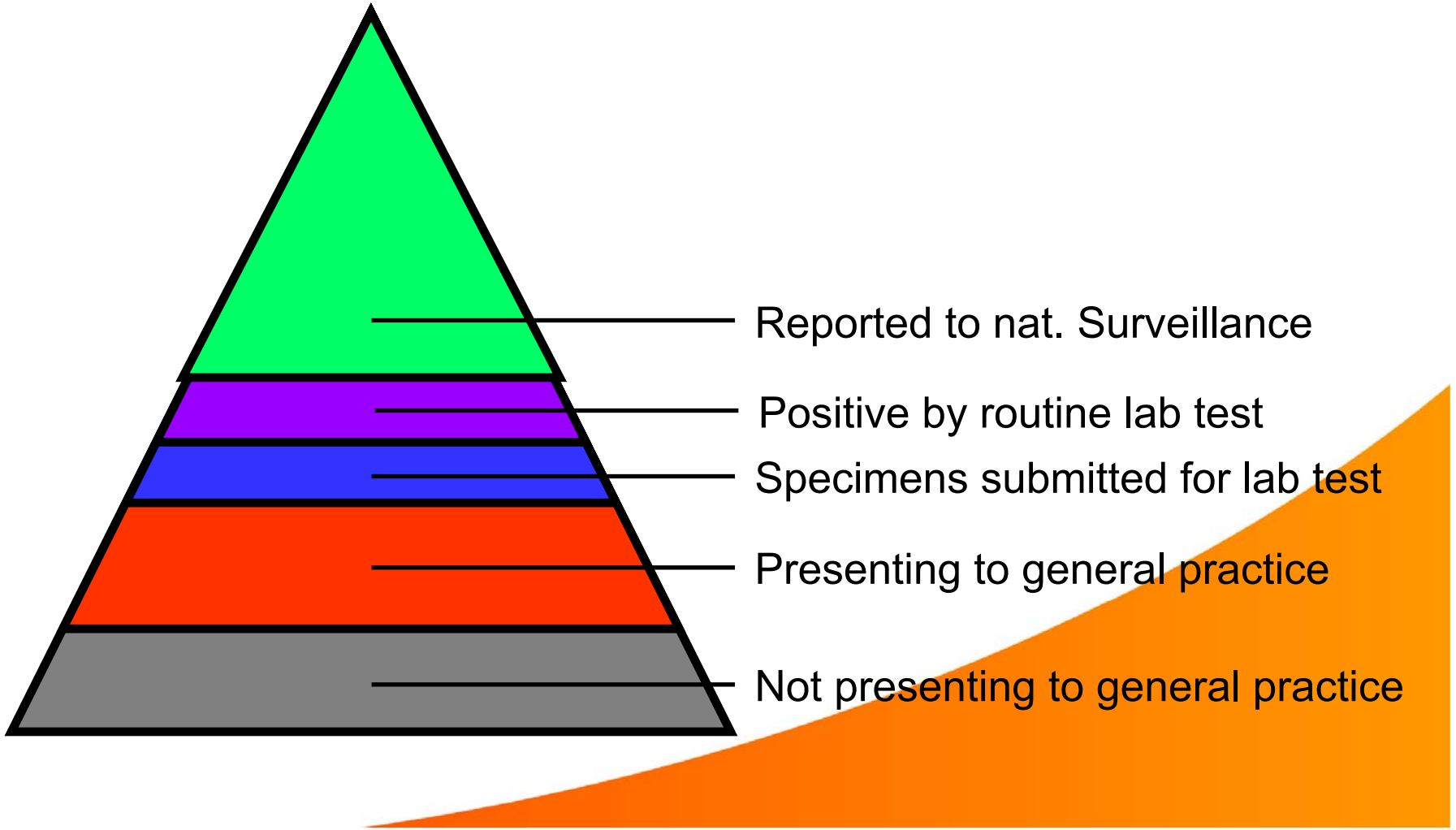
Disease

- **Sequelae**
  - Irritable Bowel Syndrome ~25%,
  - Reactive Arthritis 1-7%
  - Guillain-Barré Syndrome - one in 5000 cases
  - **Death**
  - Underlying cause in 45 instances from 1993 to 2006 (0.007%)
  - All-cause mortality:153 deaths (0.02%)

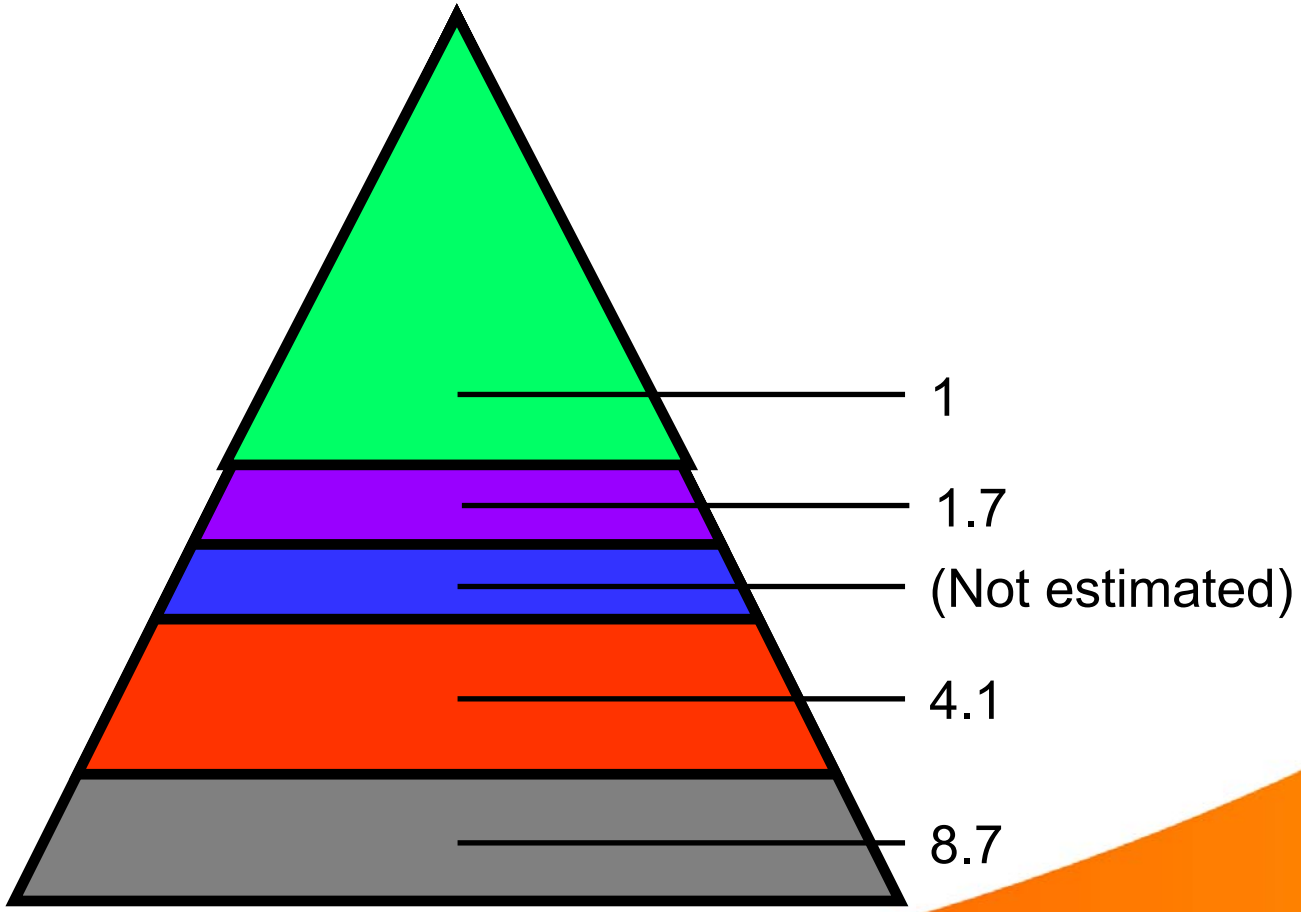
Human campylobacteriosis, E&W



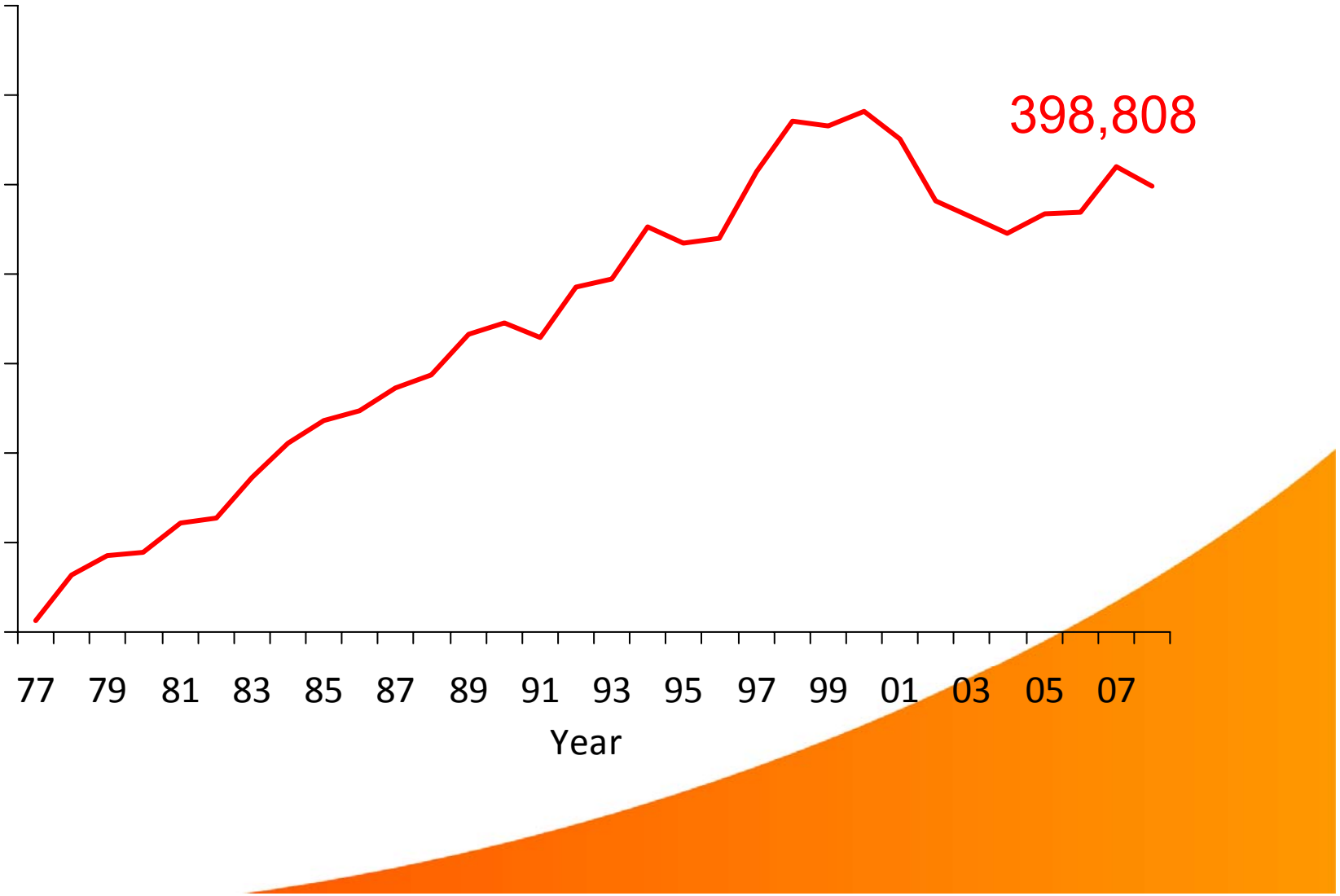
Laboratory reporting



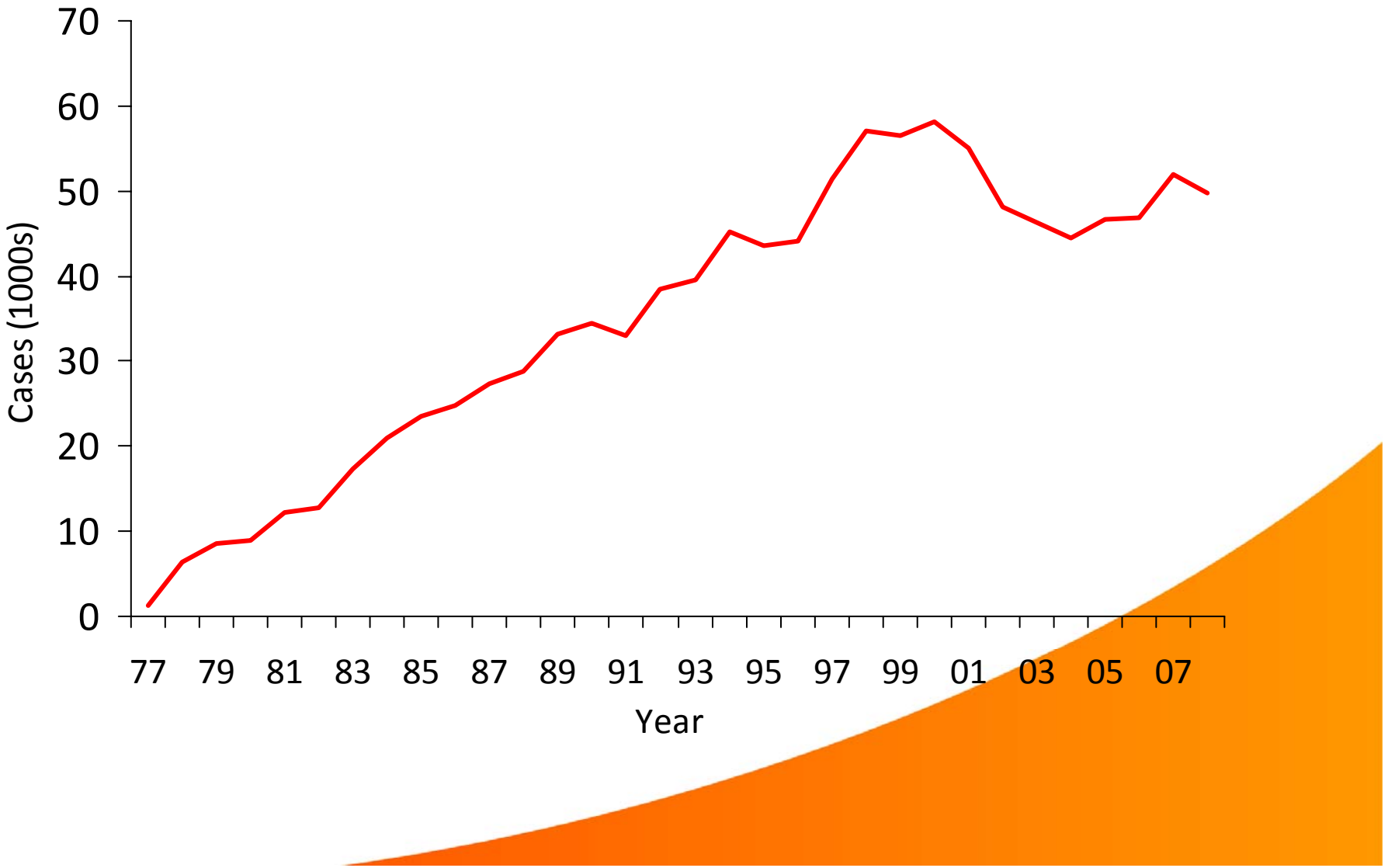
Laboratory reporting - campylobacter



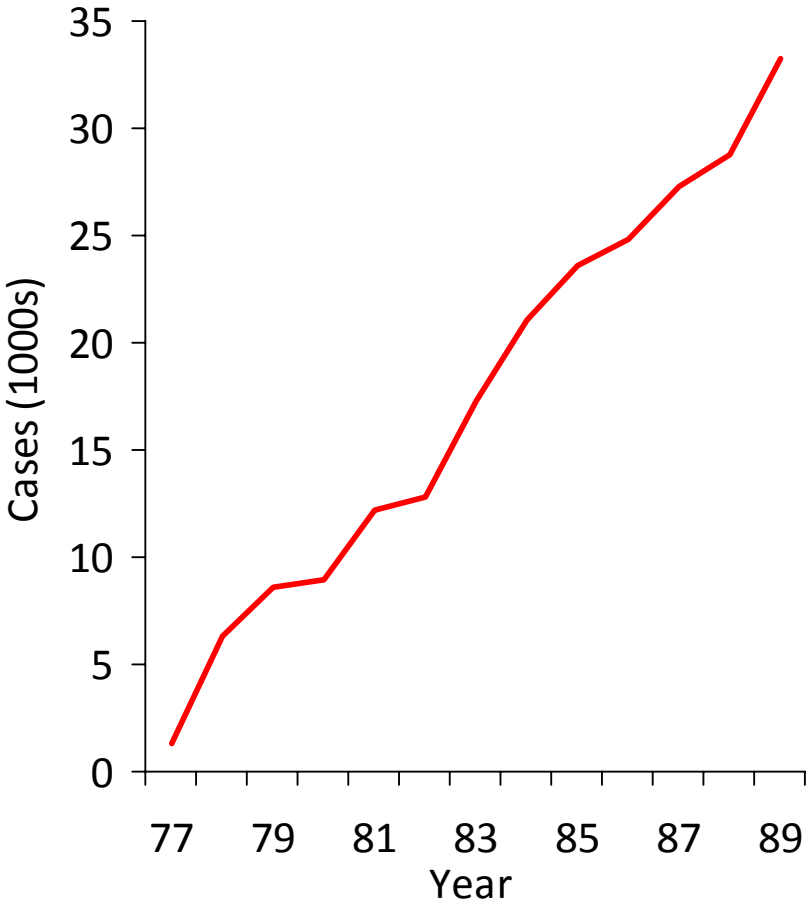
Human campylobacteriosis, E&W



Human campylobacteriosis, E&W

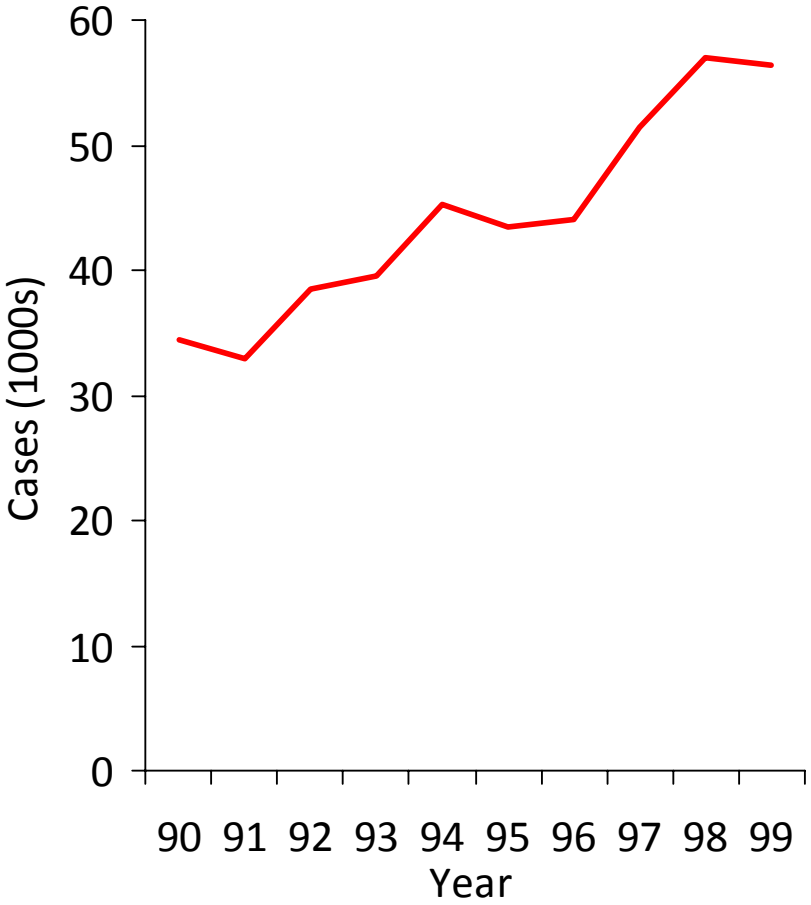


Study



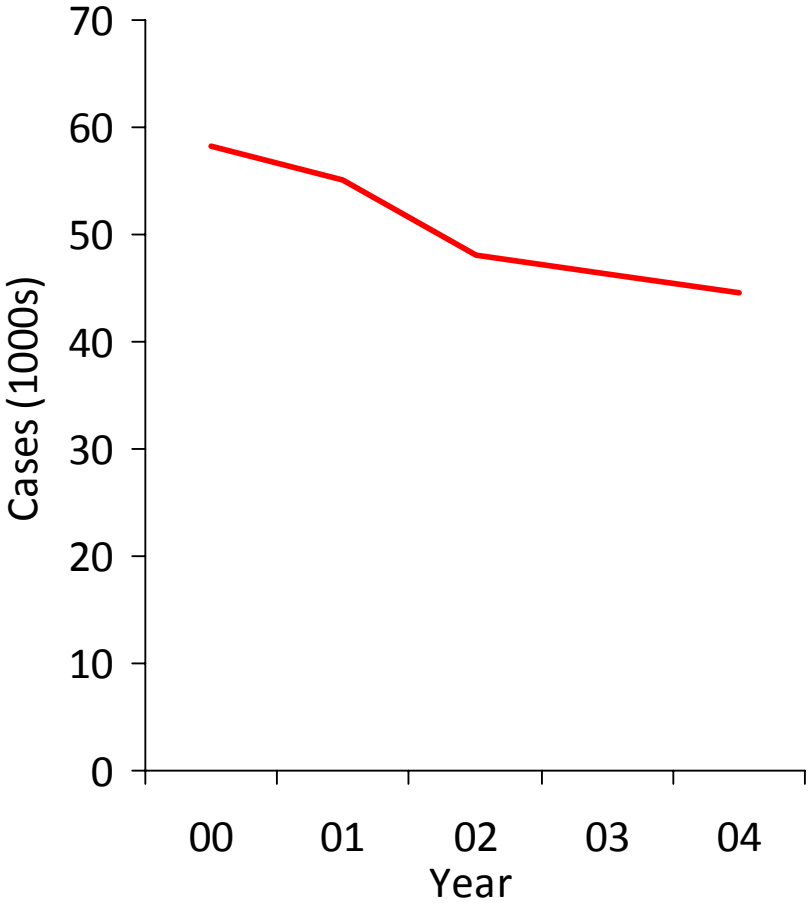
- **'Discovered' 1977**
- **271% increase**
- **Artefactual**
  - ↑ scientific interest
  - ↑ testing
  - improvements in isolation

Study II



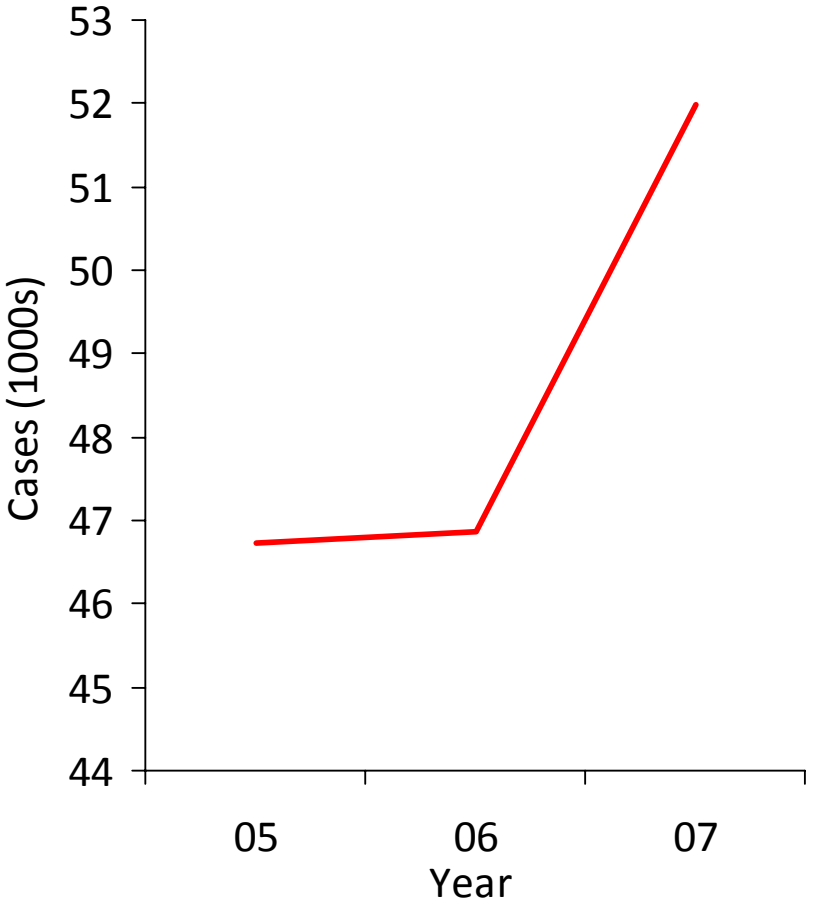
- **64% increase**
- **Not explained fully**
  - further methodological improvements
  - increased surveillance

Study III



- **24% decrease**

Study IV

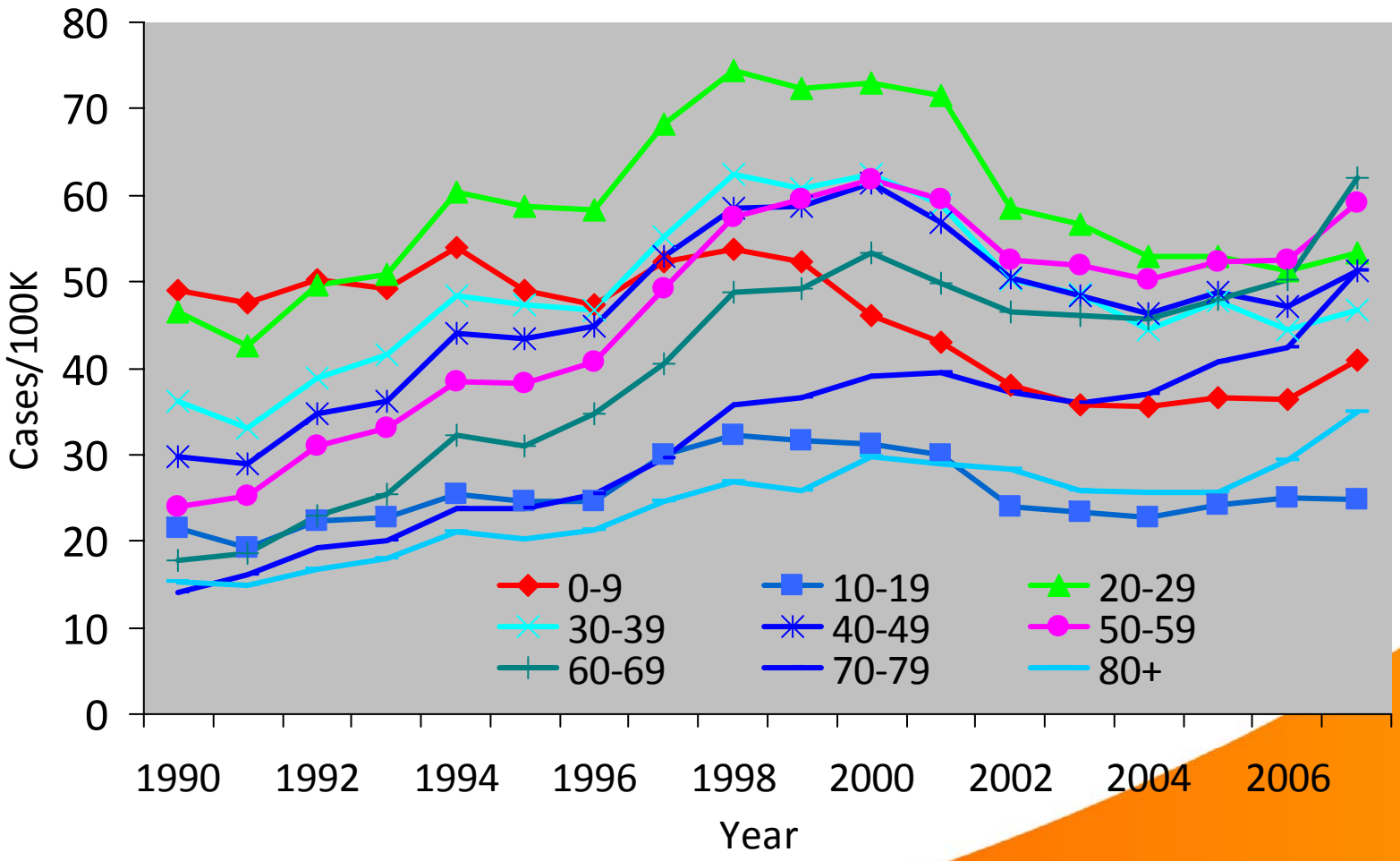


- **11% increase**

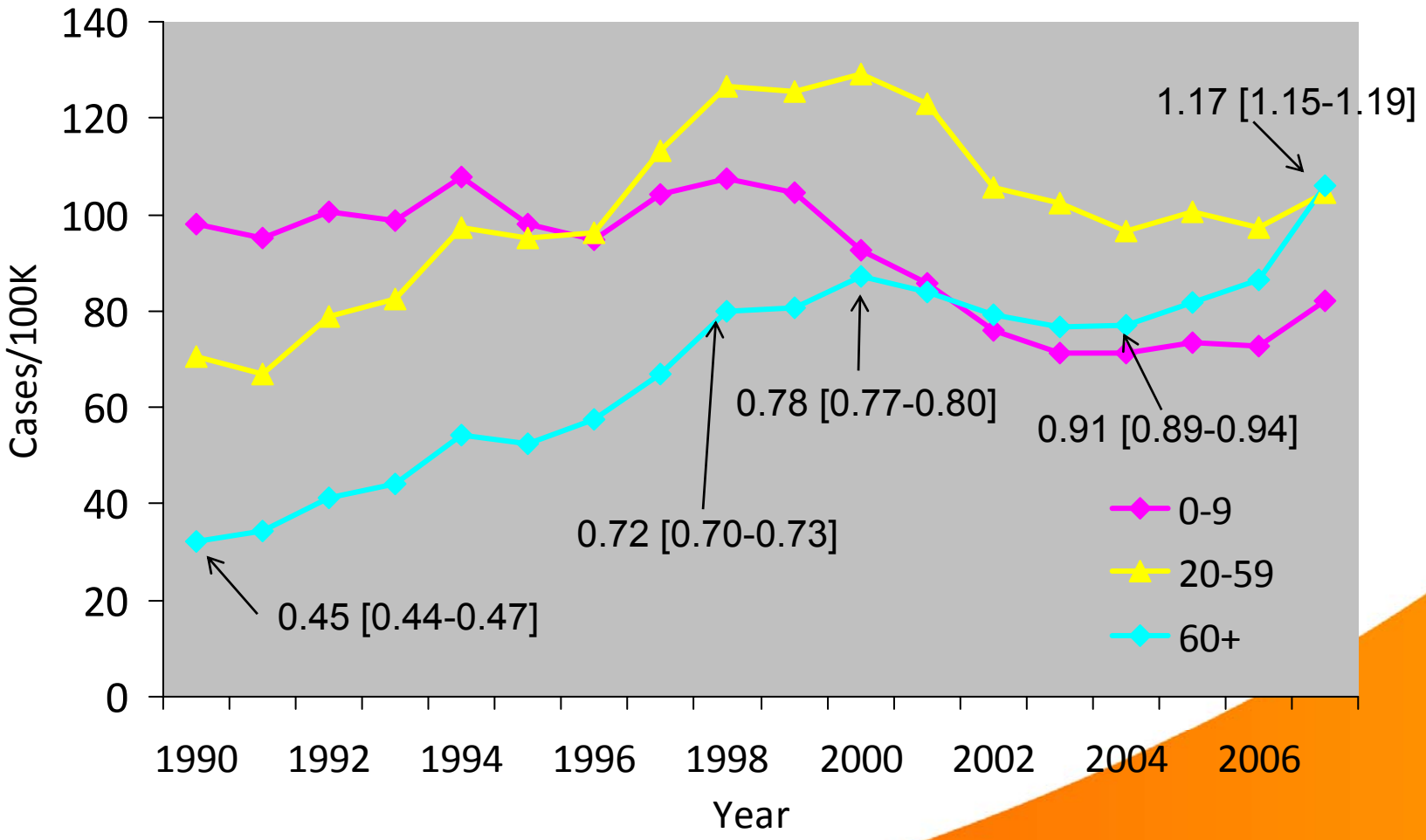
Aims & methods

- **To describe these changes in incidence in greater detail**
- **All cases of *Campylobacter* infection**
  - E&W
  - 1990-2007
- **Denominator data from ONS**
- **Age-specific incidence rates were calculated**
- **Gender, geography & season investigated**
- **Non-typhoidal salmonellas and cryptosporidiosis**

Incidence by age group, E&W



Incidence by age group, E&W



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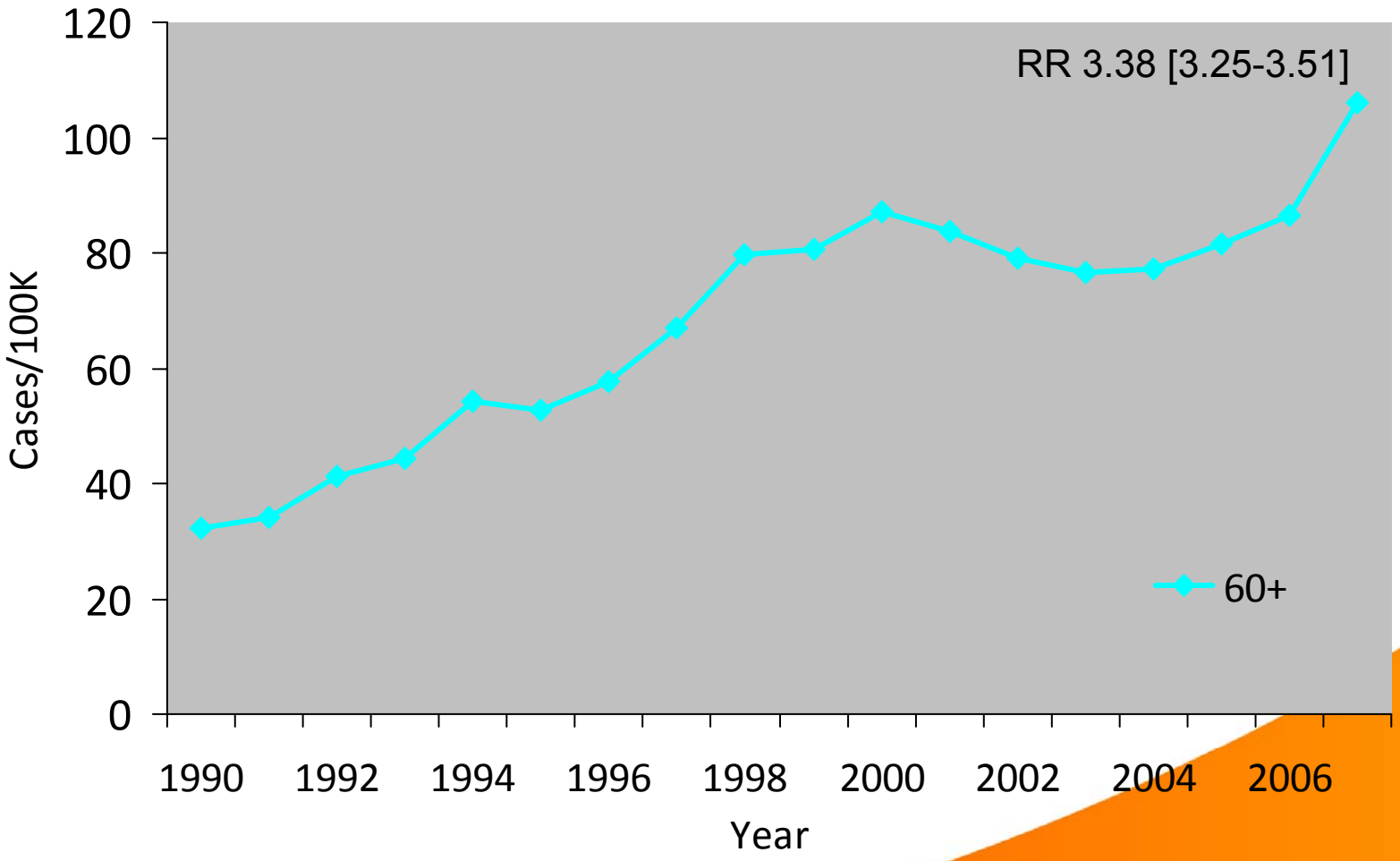
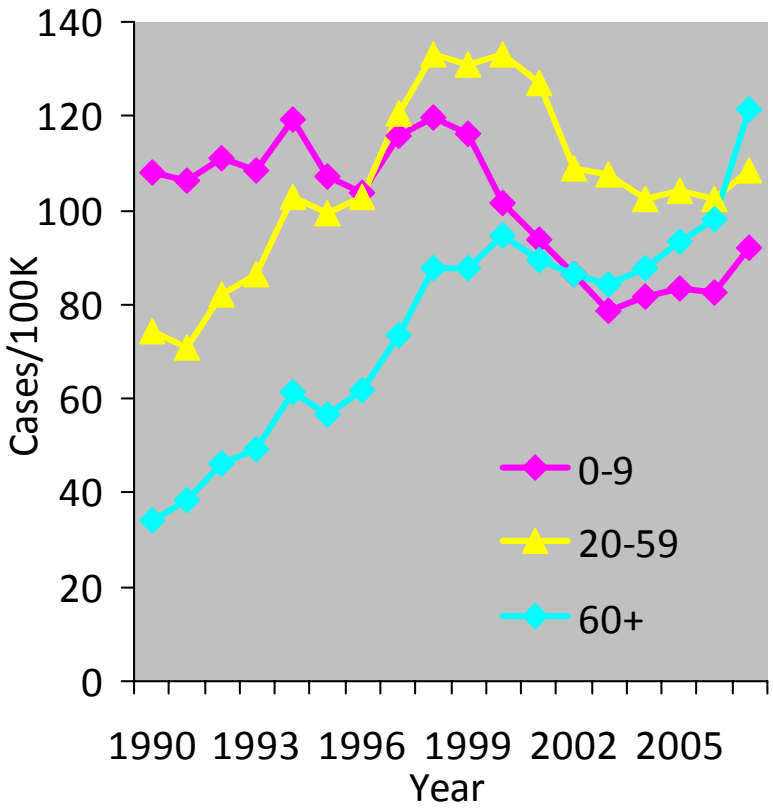
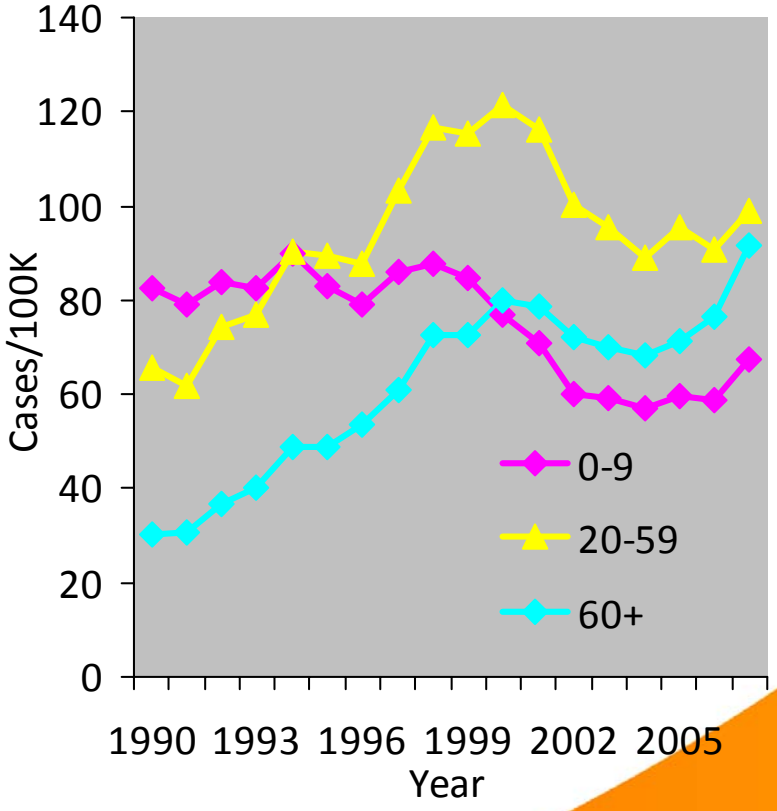


Incidence by age group, E&W

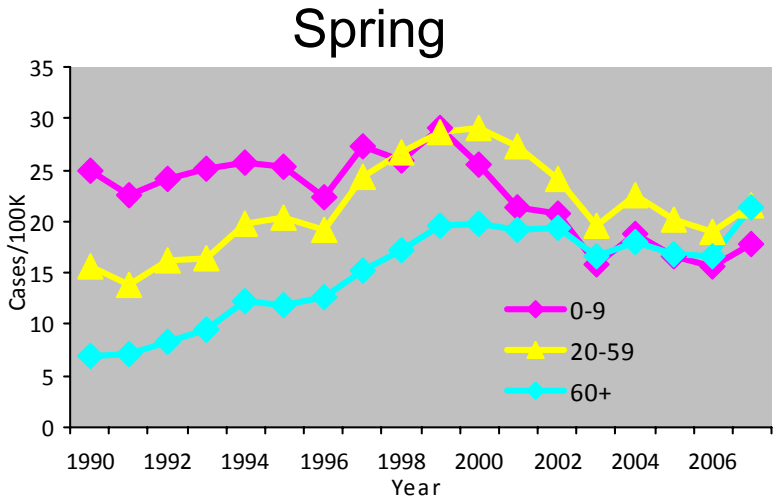


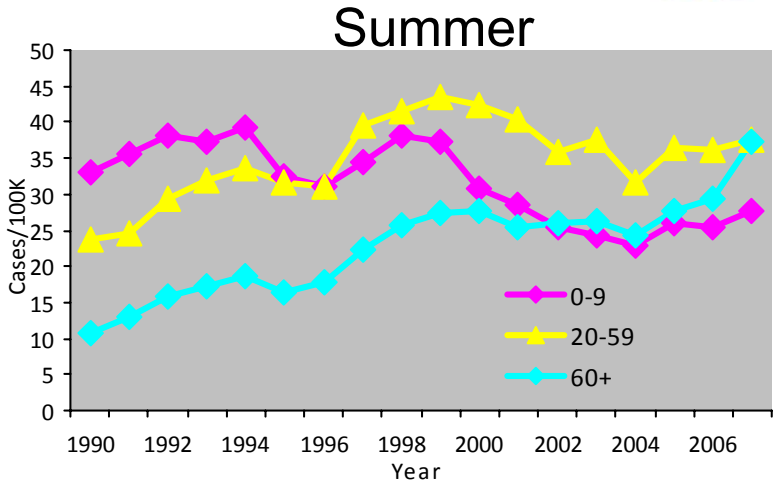
Males

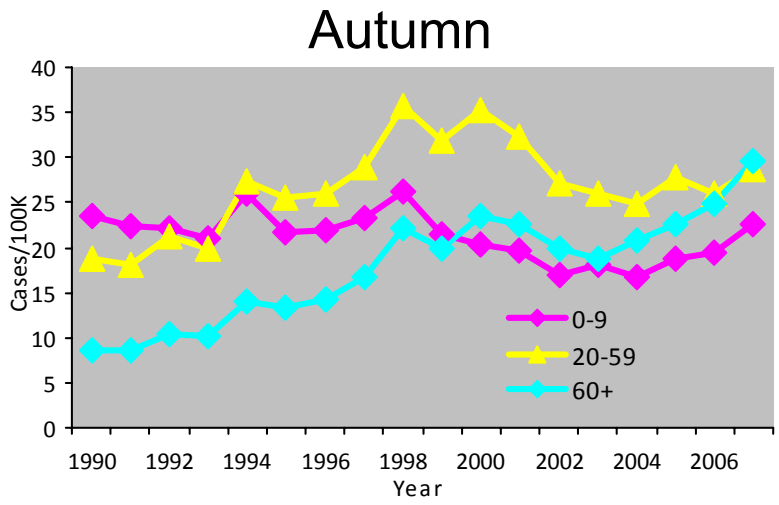


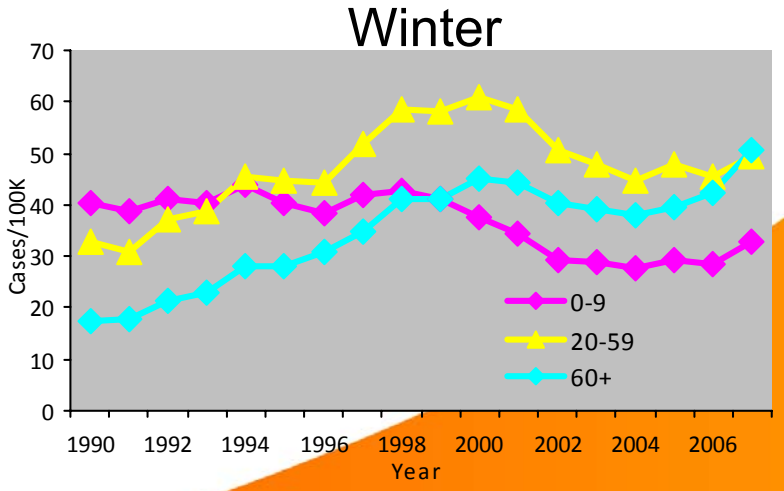
Females

Incidence by age group, E&W



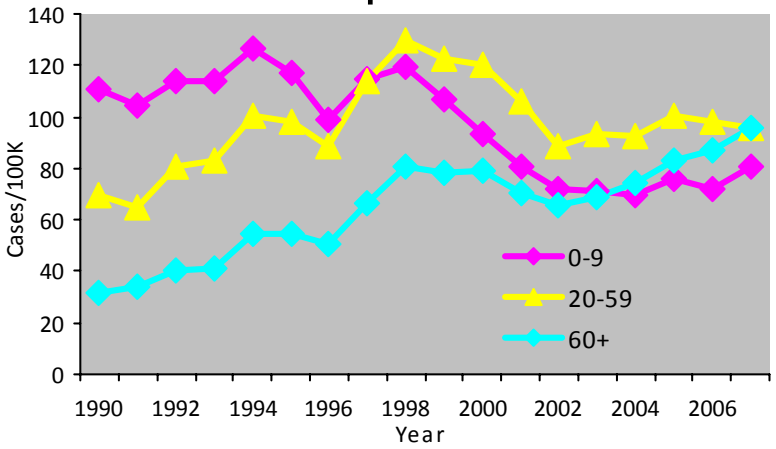




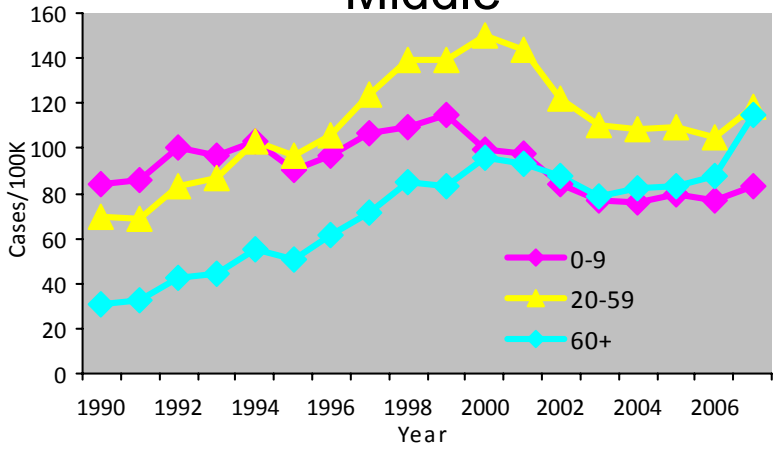


Incidence by age group, E&W

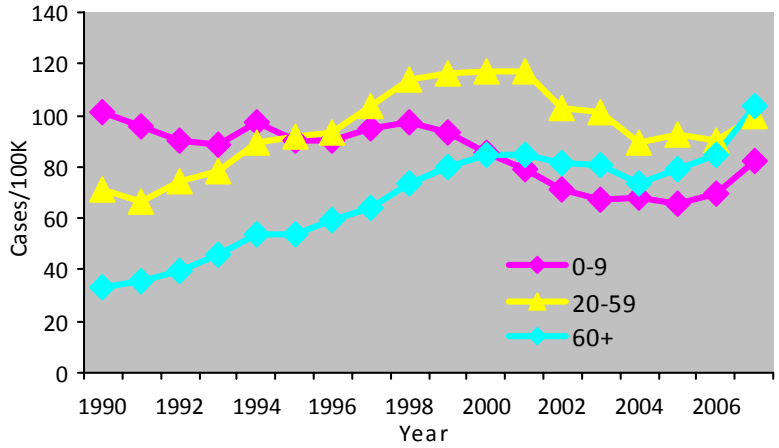
‘Top’



‘Middle’

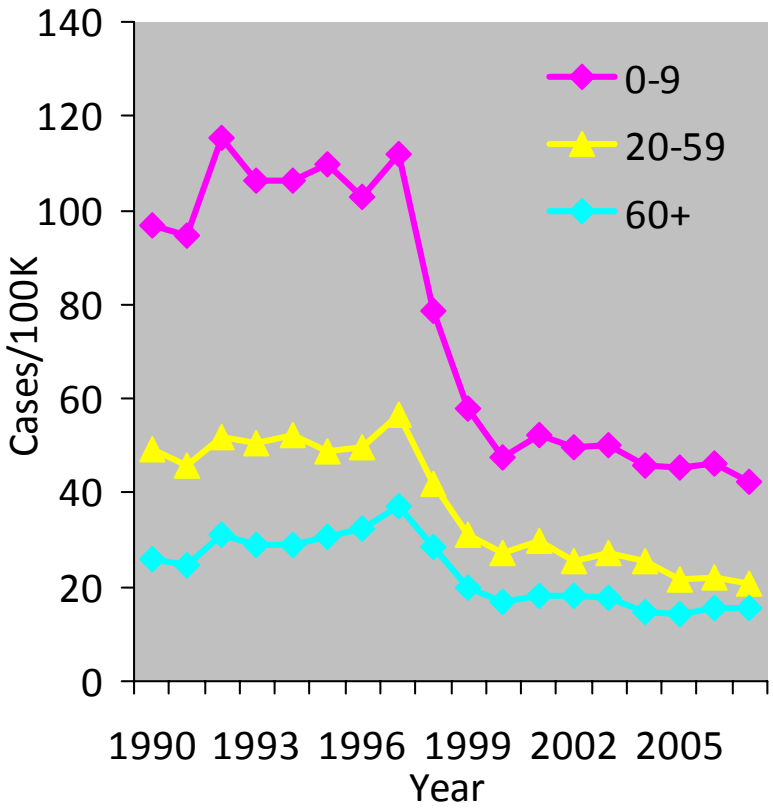


‘Bottom’

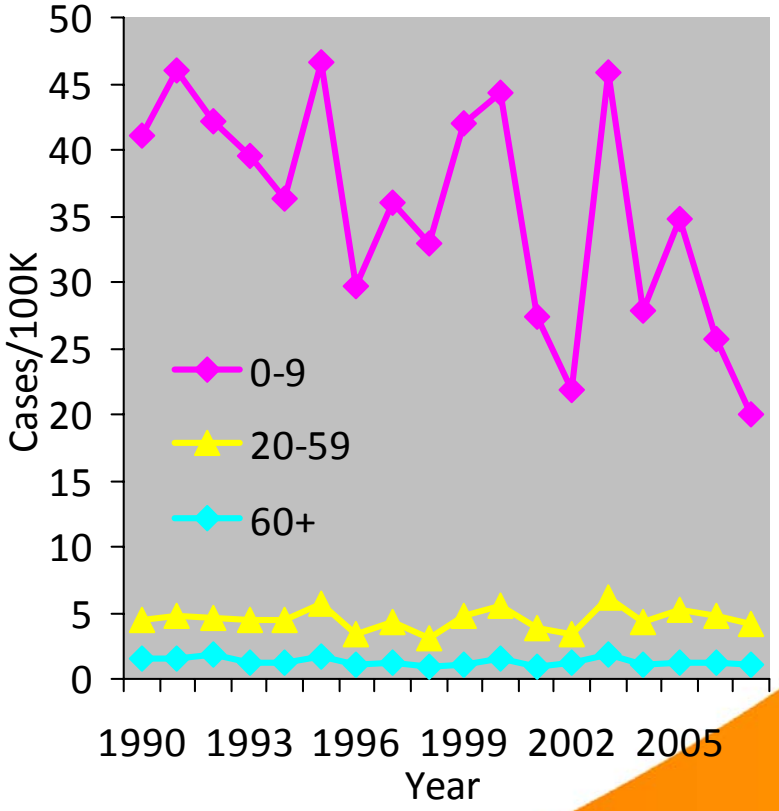


Area	Regions
Top	NW, NE, Y&H
Middle	EM, WM, Wa, East
Bottom	Lond, SE, SW

Incidence by age group, E&W



Salmonella



Crypto

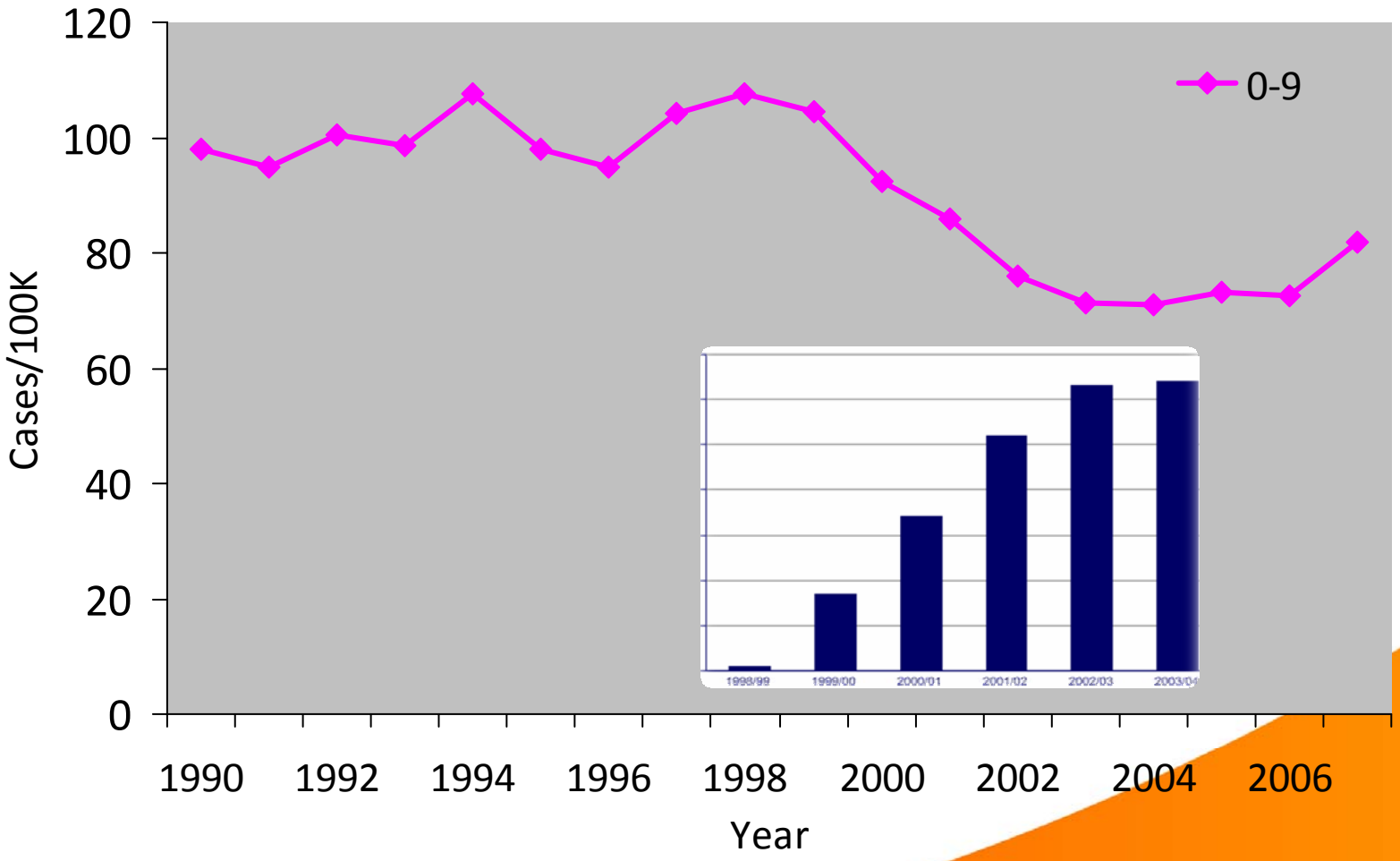
Conclusions

- **Dramatic change in the age structure of human campylobacteriosis in England and Wales**
- **Independent of**
  - Gender
  - Season
  - Geography
- **Not observed for other common GI pathogens**
  - Less likely to be a surveillance artefact…

Infants/young children

- **Highest incidence in 1990; 7th of 9 in 2008**
- **Declined most rapid from 1998 to 2003**
  - NHS direct

Incidence by age group, E&W



Inset: Calls to NHS Direct 98/99 to 03/04 (Source: ONS)

Infants/young children

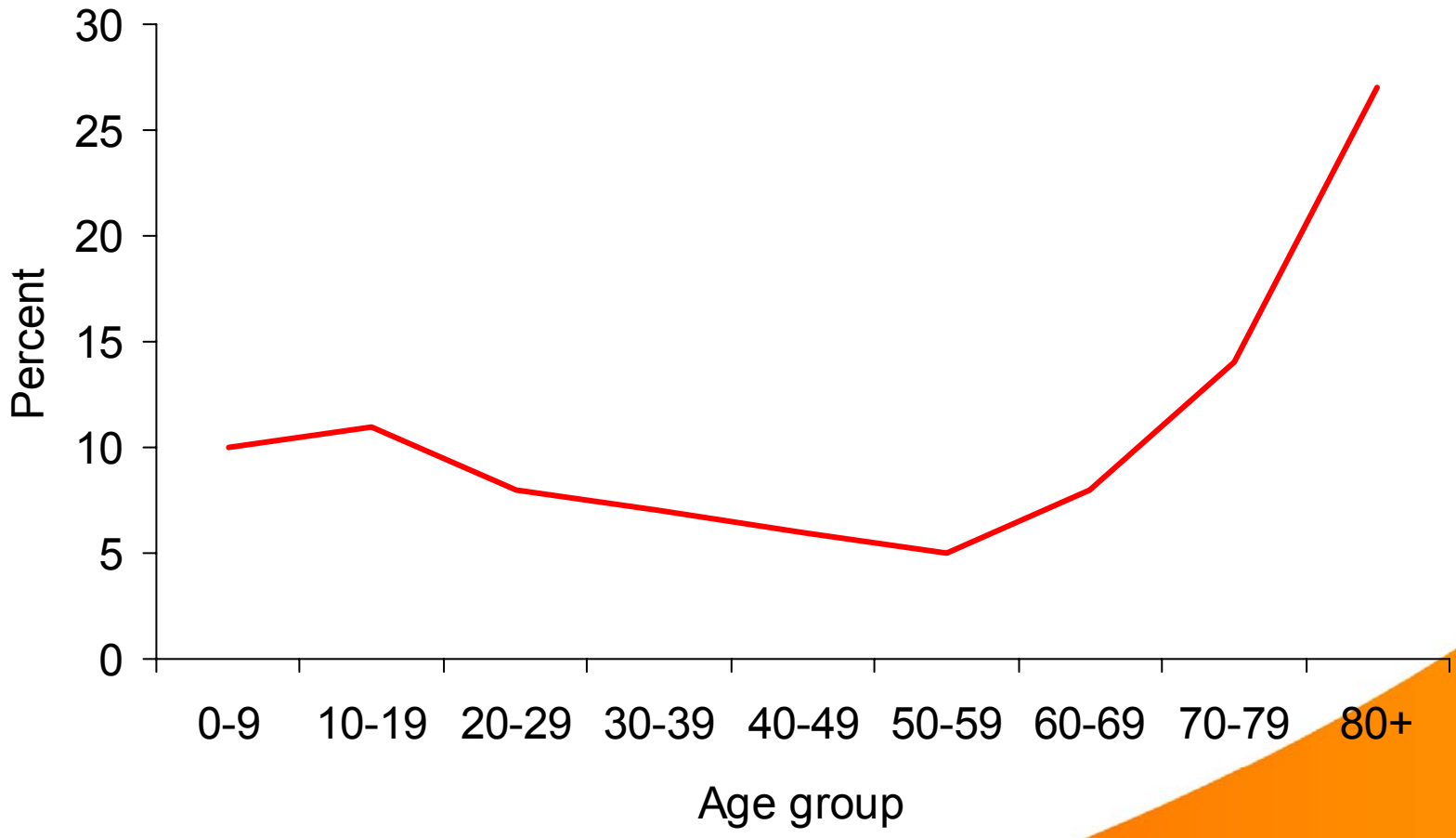
- **NHS direct**
  - Demonstrable negative effect on general practice use
  - Infants and young children are over-represented amongst GI calls to NHS Direct

  →Triage effect on primary care presentation
- **IID2 will inform on this hypothesis**

Older people

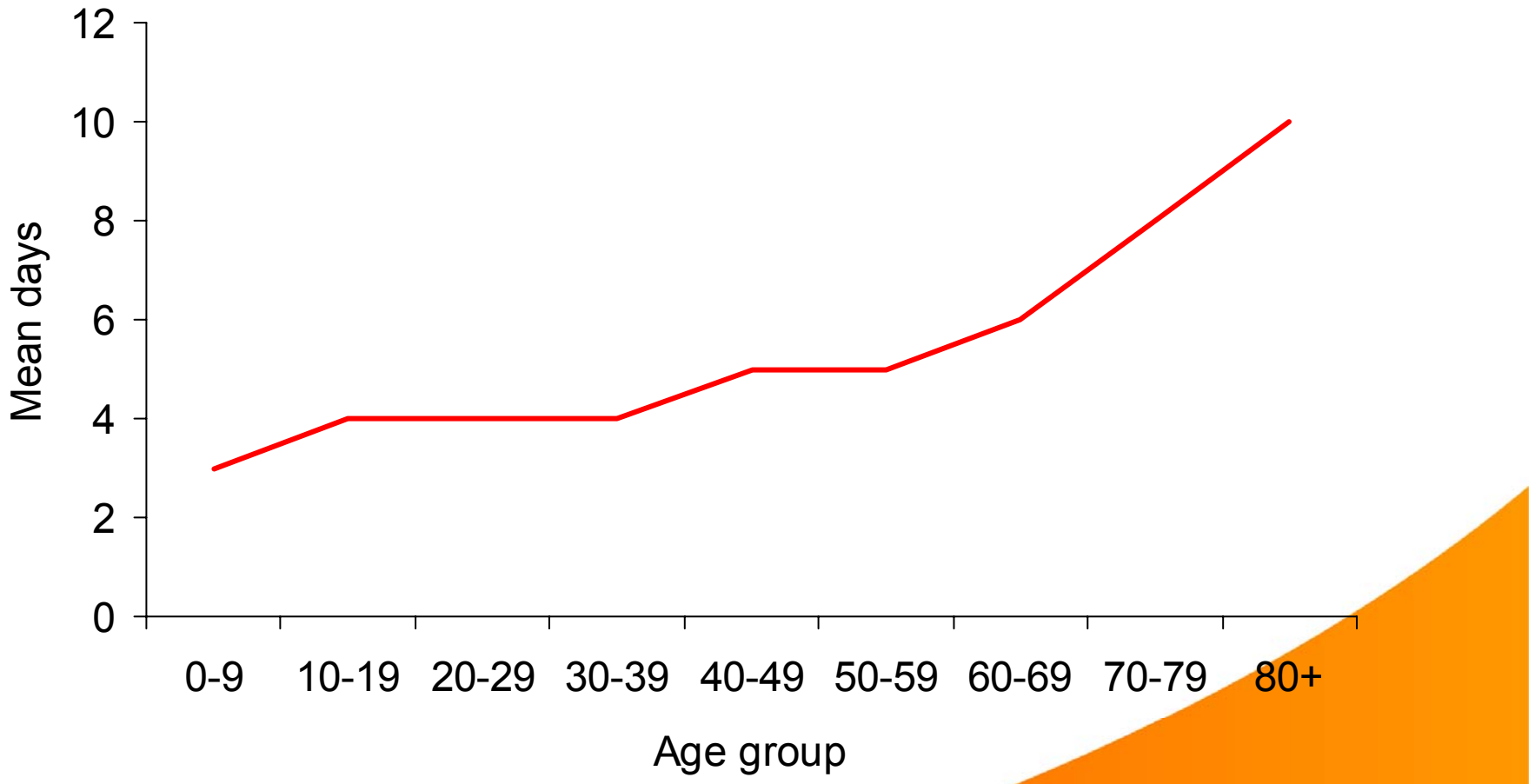
- **Now the group at greatest risk of campylobacteriosis in England and Wales**
- **Implications for impact…**

Hospital admission by age group



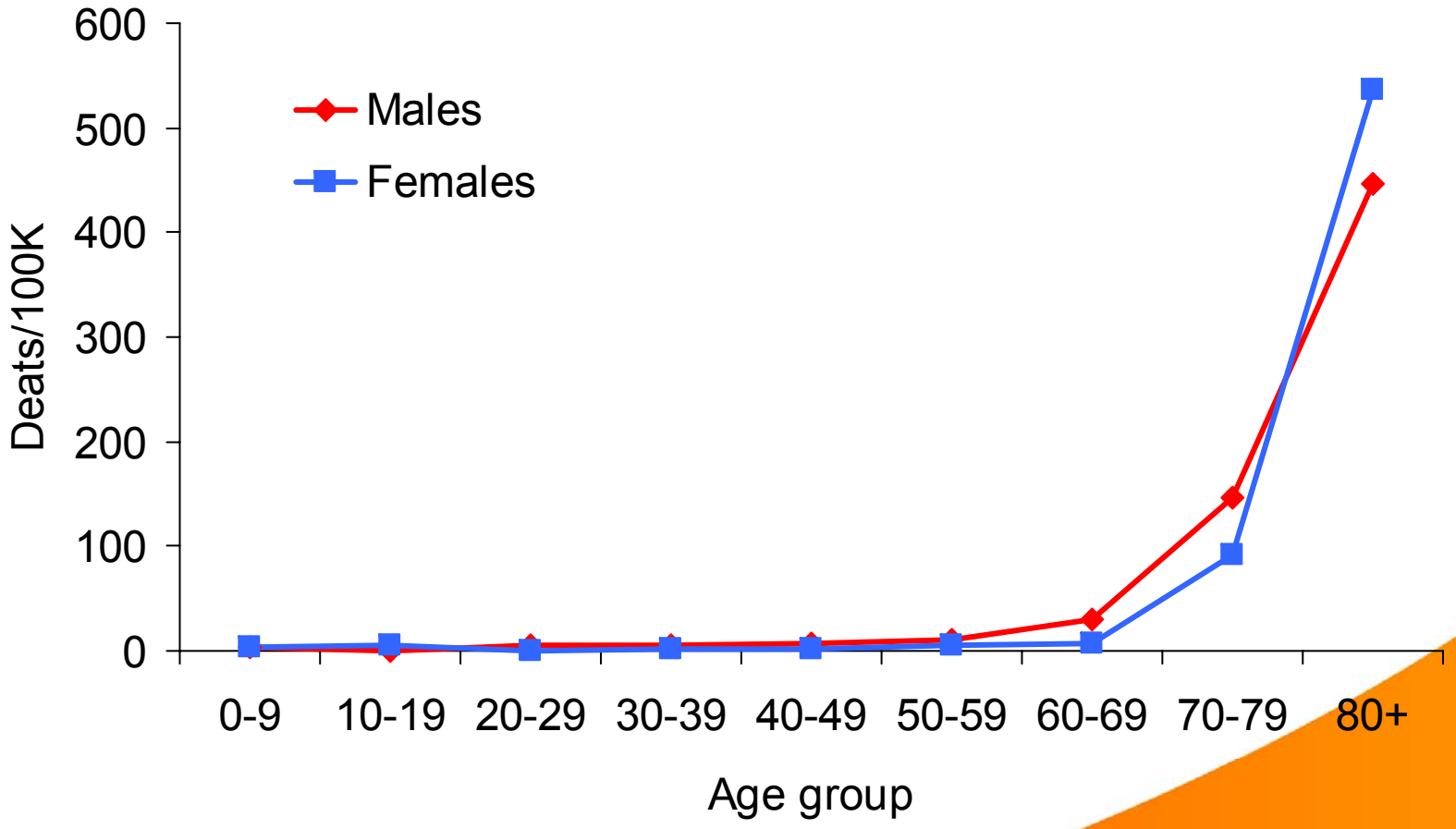
Source: Campylobacter Sentinel Surveillance Scheme (N=15,608)

Hospital stay by age group



Source: Campylobacter Sentinel Surveillance Scheme (N=1352)

Campylobacter mortality by age group

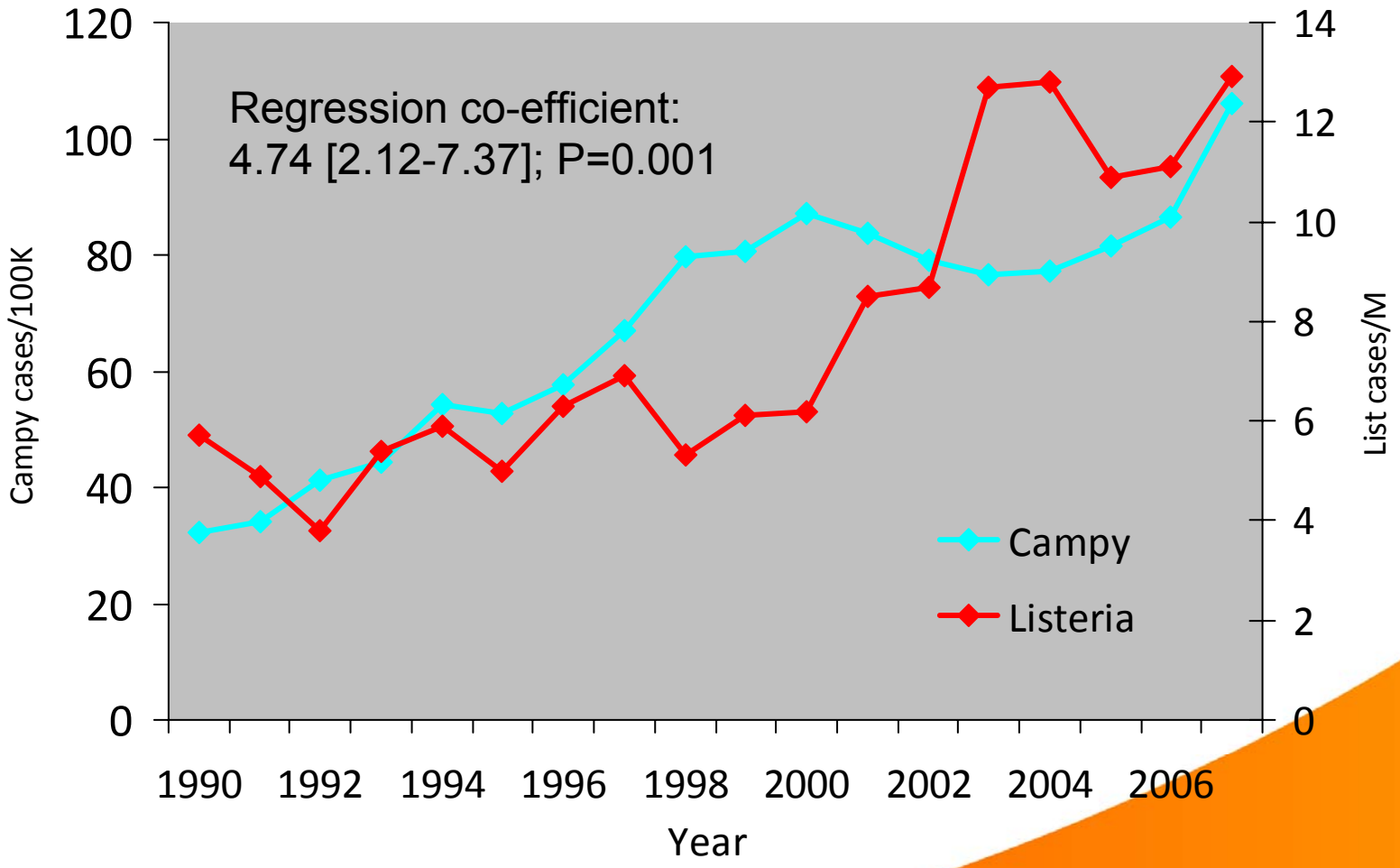


Source: IA Gillespie. PhD Thesis 2008

Older people

- **Now the group at greatest risk of campylobacteriosis in England and Wales**
- **Implications for impact…**
- **Similarity to listeriosis?**

Incidence in 60+ years, E&W



Older people

- **Now the group at greatest risk of campylobacteriosis in England and Wales**
- **Implications for impact…**
- **Similarity to listeriosis?**
  - Shared risk factors (host susceptibility)
  - More amenable to study?
- **A clear need to identify risk factors for *Campylobacter* infection specific to older UK residents**