Birds, Bacteria & Baselines

Managing Contamination Through Chain to Improve Public Health Outcomes

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Presentation Outline

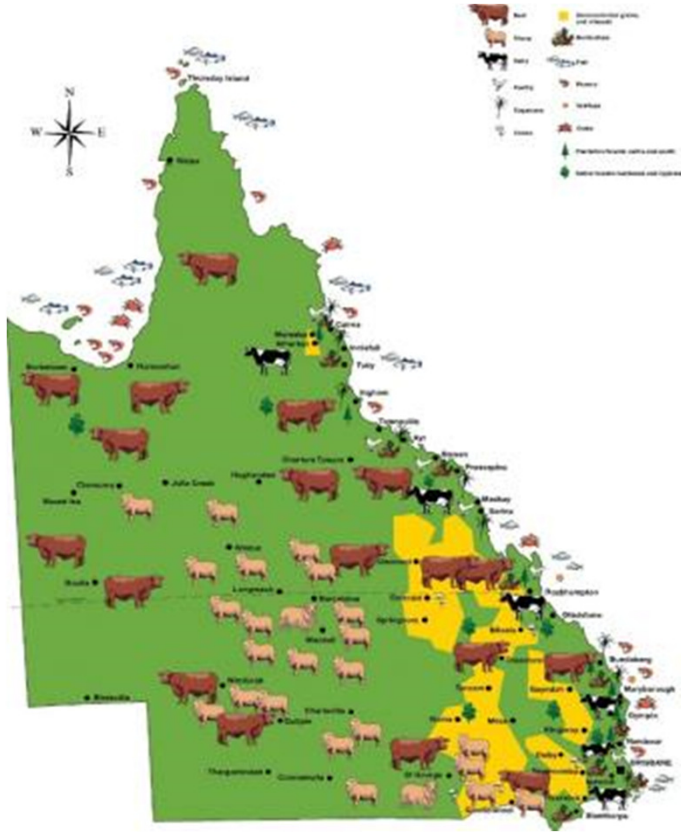
- Who is Safe Food Production Queensland
- Poultry Meat Food Safety
- Background to Implementation
- Baselining and Benchmarking
- Testing the Baseline Model and Microbiological Surveys
- Public Health Outcomes
- Conclusions and Future Directions

Who is Safe Food Production Queensland?

- Based in Brisbane, Australia
- Established in October 2000 under the Food Production (Safety) Act 2000
- Statutory body reporting to the Queensland Minister for Agriculture, Fisheries and Forestry
- Aims to promote and protect food safety in QLD's primary production sector

Who is Safe Food Production Queensland?

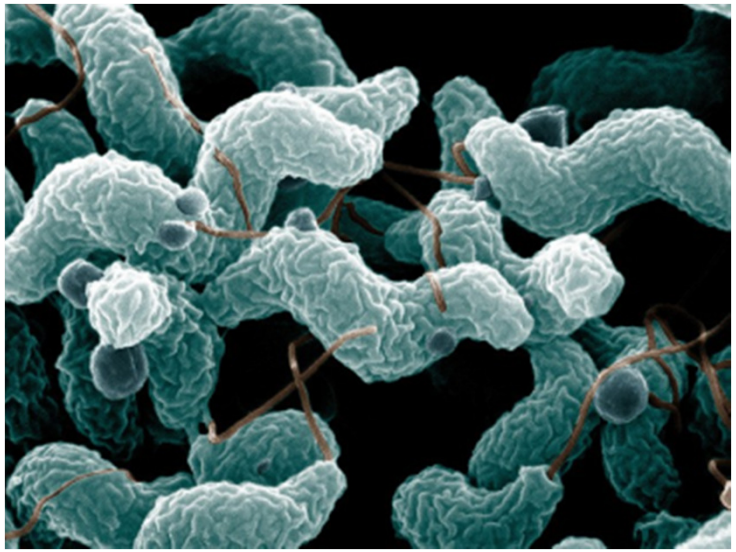
- State government food safety regulator responsible for meat, dairy, seafood and eggs.
- Vision:
  - *Consumers, both at home and abroad will have confidence and trust in the integrity of the food safety control system and that the highest international standards are applied in the agri-food sector.*
  - *SFPQ is as an influential agent for change putting a culture of food safety at the heart of every accredited food business in Queensland.*



Poultry Meat Food Safety

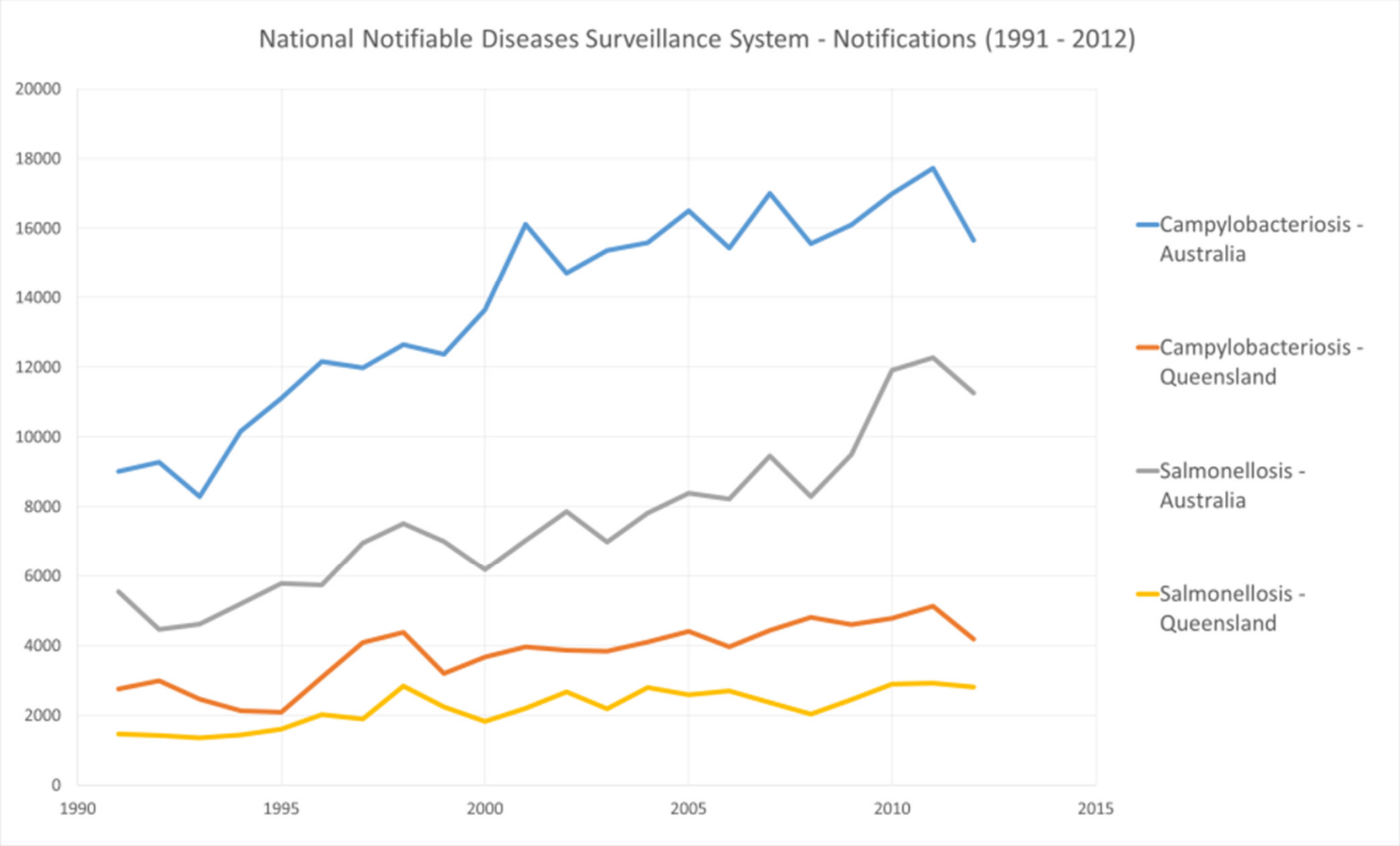
- Microbiological contamination is the most significant public health risk associated with poultry meat.
- High mechanisation and large volumes may potentially translate to greater risk.
- Food businesses are responsible for maintaining effective food safety management systems.
- Traditionally, control of microbiological risk has been heavily reliant upon chemical interventions (e.g. chlorinated washing/chilling).

Poultry Meat Food Safety



Campylobacter jejuni

Salmonella enterica subsp.



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National Standard 4.2.2

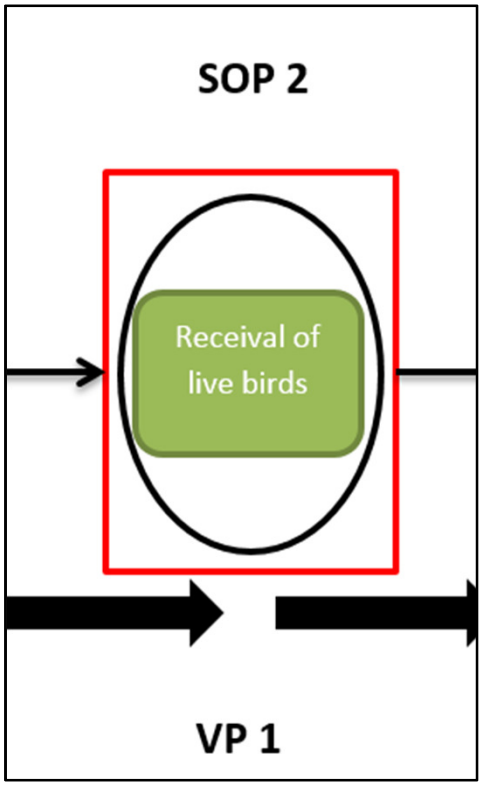
- Requirement for national regulatory framework to improve traceability and control of food safety hazards through the production and processing chain.
- Public health concerns noted over a steadily increasing rate of Campylobacteriosis/Salmonellosis linked to poultry meat over a prolonged period.

SFPQ's Implementation of Standard 4.2.2

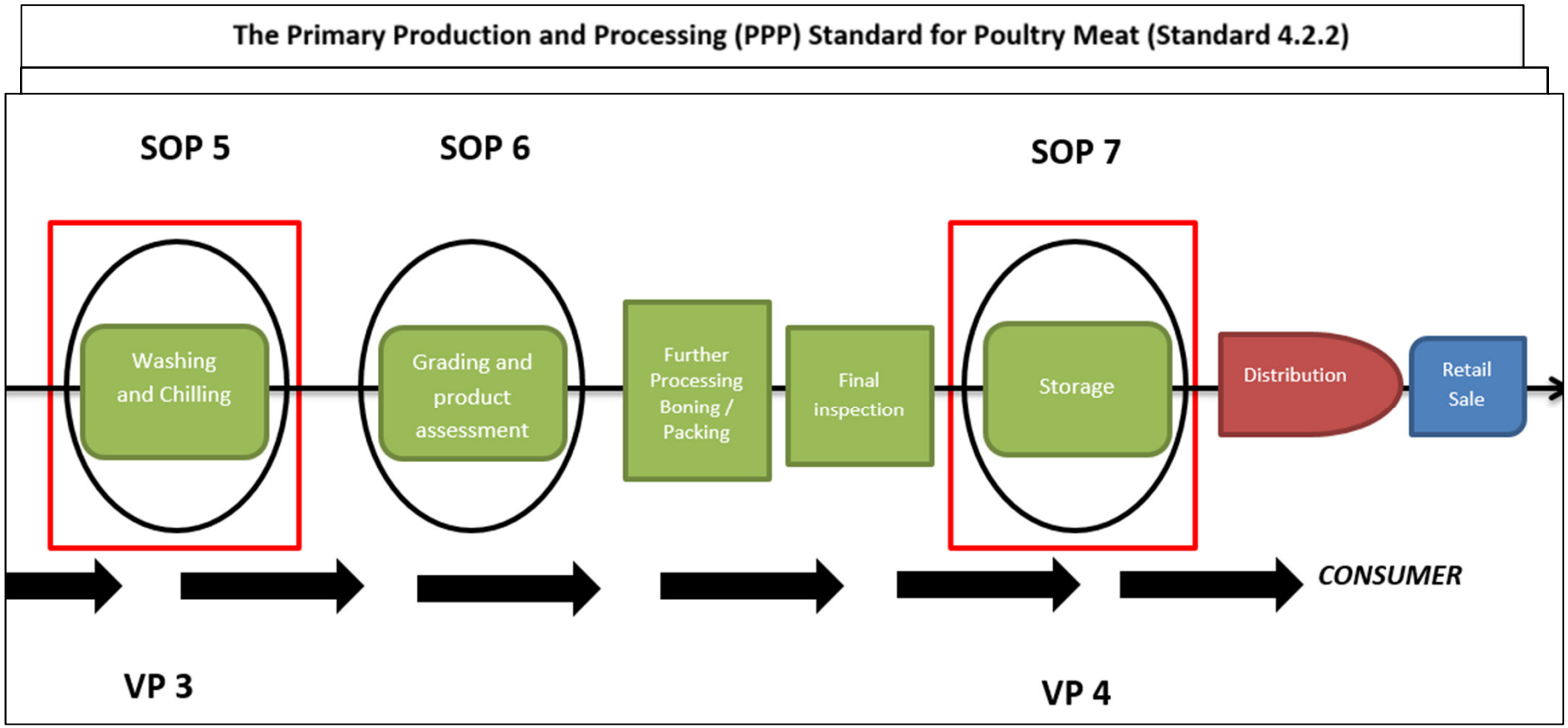
- Evaluate the effectiveness of current food safety control systems within this baseline.
- Engage with industry to develop best practise procedures and implement requirements under the new standard.
- Create a through-chain baseline that identifies most effective microbiological control measures.
- Evaluate and review the effectiveness of the implemented changes within the system.

Development of Baseline

- Mapping all of Production Points in the supply chain
- Develop specific standard operating procedures were developed around the four verification points based upon Std 4.2.2.
- Each SOP provided direction around:
    - Task descriptions
    - Relevant skills and knowledge required
    - Validation and monitoring of controls
    - Corrective actions required



Baseline Development



Agreed Industry Targets

SOP Industry-agreed targets:

- Feed withdrawal – 8-12hrs
- Spin wash/chill overflow - >5ppm FAC; 4-7pH; temperature <4°C
- Microbiological targets - <4 $\log_{10}$ CFU/carcase *Campylobacter*; <100 MPN/carcase *Salmonella*

Managing the front of the system

EXAMPLE – SOP for Bird Receival

- Ante-mortem Inspection of Poultry
- Removal of unhealthy or diseased poultry
- Control of medication or organic or inorganic residues
- Approved Suppliers
- Feed withdrawal parameters
- Welfare

Managing de-contamination

EXAMPLE – SOP for Carcase Wash Spin Chill

- Monitor free chlorine levels at spin chiller outlet
- Monitor pH levels
- Monitor ORP Levels
- Product temperature
- Monitor water temperature

Managing Systems (cont.)

SOPs should also include:

- Monitoring of compliance- what, how, when and by who
- Training
- Validation
- Corrective Action

Verification of Baseline by Microbiological Sampling

- To examine the effectiveness of the developed baseline, a microbiological study was undertaken to assess industry performance.
- A quantitative measure of the implementation process
  - Microbiological control barriers
  - Verify industry targets in developed SOPs

Methodology

- 8 processors who process 98% of the product in Queensland
- Four points along the processing chain sampled:
  - Caecal samples
  - Post-evisceration
  - Post-washing
  - Final product
- One sample per shift per day
- Birds from same farm/shed collected from each point

Results

- All plants sampled
- Birds entering plants carried significant loads of pathogenic bacteria in their gastrointestinal tract:
    - *Campylobacter – 98.7%*
    - *Salmonella – 18%*
- Although 6 of 8 plants had a reduction in Campylobacter at various points;
- The reduction could not be maintained

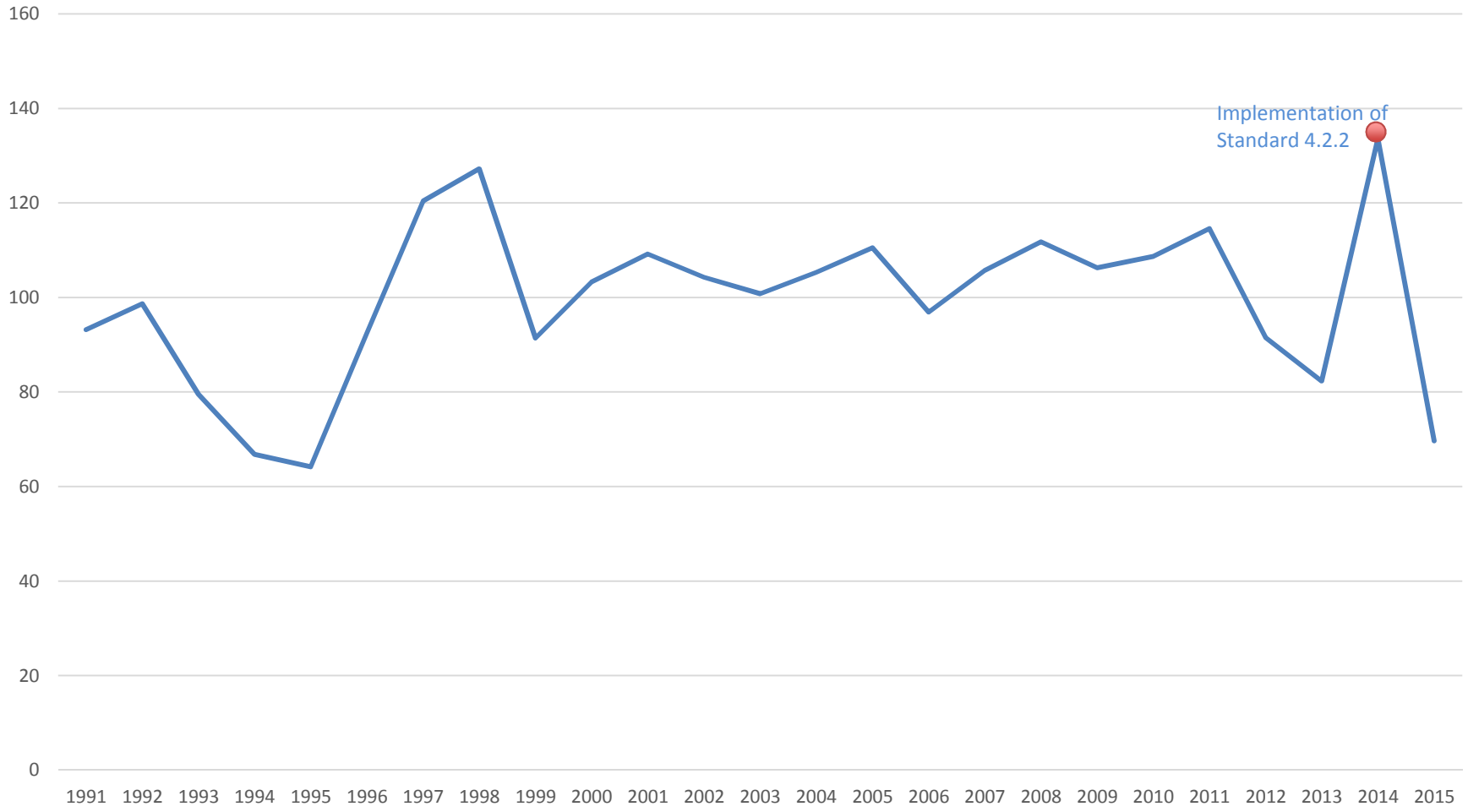
Results (cont.)

- Implementation
  - Reduction maintained through-chain; 4 of 8 plants achieved >97% through-chain reduction in *Campylobacter*
  - Consistent reduction of *Campylobacter* - average final concentration of *Campylobacter* ; 4.16 $\log_{10}$ CFU/carcase (vs. FSANZ national mean 4.79 $\log_{10}$ CFU/carcase)
  - Two plants achieved <4 $\log_{10}$ CFU/carcase *Campylobacter*- not previously obtained
  - Five plants achieved <100 MPN/carcase *Salmonella* which was within target.
  - Improvements noted around process controls at strategic verification points through the processing chain.

Results to Date

- All facilities in most instances can now demonstrate levels that are less than, or equal to the industry target of 4 log_{10}CFU/carcase on final product. There are some exceptions to the rule.
- All plant facilities can demonstrate mean carcase counts that met or exceeded the indicated industry target of 100 MPN/carcase.

Campylobacter notifications / 100,000 population in QLD, 1991-June 2015



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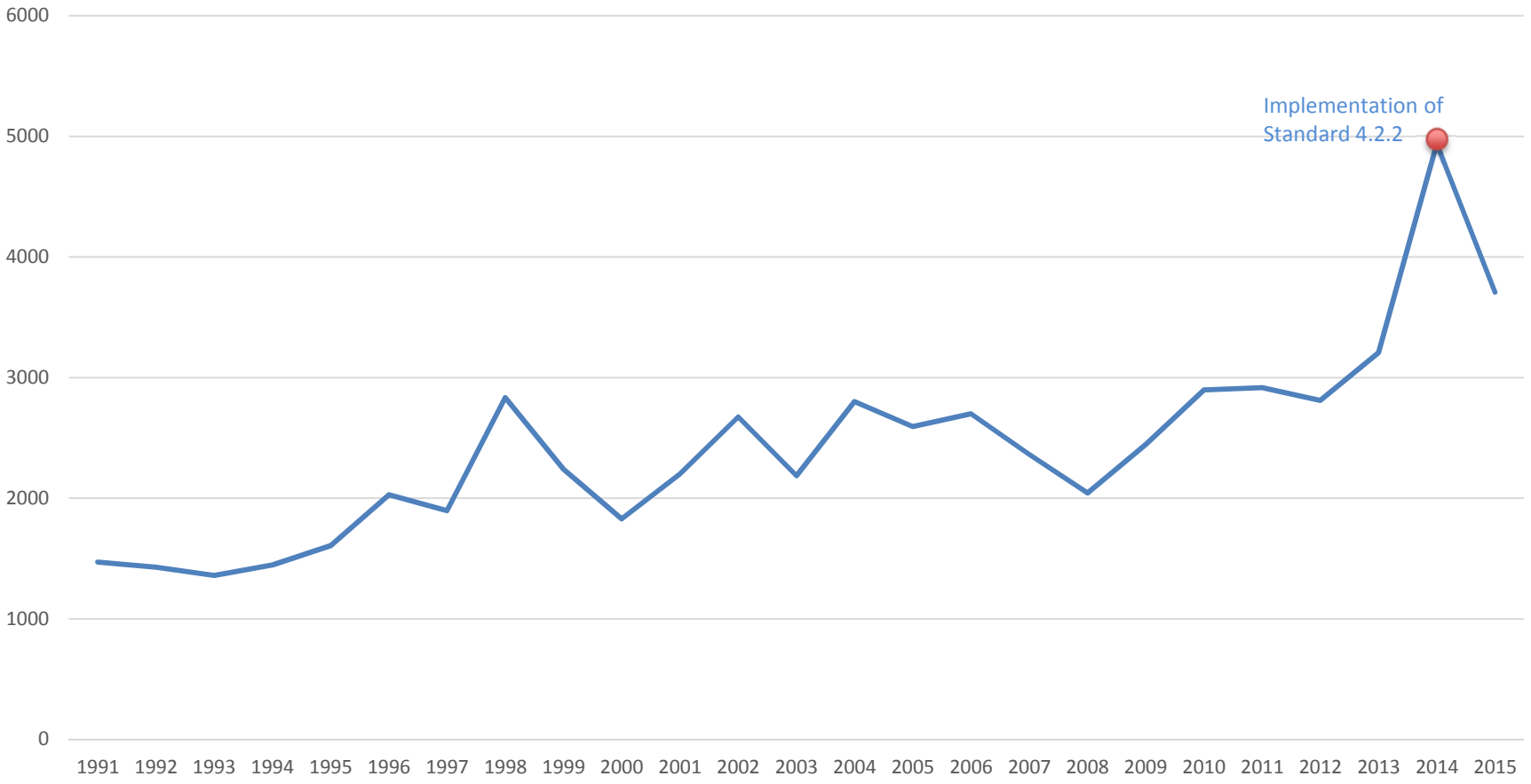
Salmonella notifications in QLD, 1991-June 2015



Conclusions

- Poultry meat production in Queensland demonstrates improvement in levels of *Campylobacter* and *Salmonella* to those reported previously but there exists a high degree of variability between facilities.
- Much of this variability may be accounted for in the differential processing methods employed post-evisceration, such as washing or chilling processes. Additionally, chickens for processing also may be sourced from a number of properties, or farms supplying more than one processor.
- Continued engagement with industry and improved food safety culture within their facilities has shown that the industry targets can be achieved
- However there is a need to maintain consistent monitoring; with the introduction of the agreed electronic reporting across the agreed targets, this should give more confidence with the system.

Thank you