



United States Department of Agriculture

One Team, One Purpose



Food Safety and Inspection Service

Protecting Public Health and Preventing Foodborne Illness



Food Safety and Inspection Service:

Then and Now: The Changing Landscape of Enteric Disease Surveillance, Outbreak Detection and Response

Use of Risk Assessment to Guide Federal Decisions and the Changing Landscape of Foods Linked to *Listeriosis* Outbreaks

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InFORM 2017 Conference
Garden Grove, CA

November 7, 2017

Food Safety and Inspection Service: **Presentation Overview**

- Historical Context: Recurring Listeria Outbreaks
- Application of Risk Assessment to Guide Policies and Inspection
- Changing Landscape of Foods Linked to Listeriosis Outbreaks

Food Safety and Inspection Service: **Historical Context**

3rd

Listeria is the 3rd leading cause of death from food poisoning.



Vitalsigns[™]
www.cdc.gov/vitalsigns

- 1989 –Listerial meningitis linked to turkey frankfurters/”non-detectable standard”
- 1980s-1990s – Large-scale outbreaks of listeriosis – dairy and deli meats/hot dogs
 - **1998-1999 Hot Dog & Deli Meat Outbreak (108 cases, 14 deaths)**



Food Safety and Inspection Service:
Mission in Action

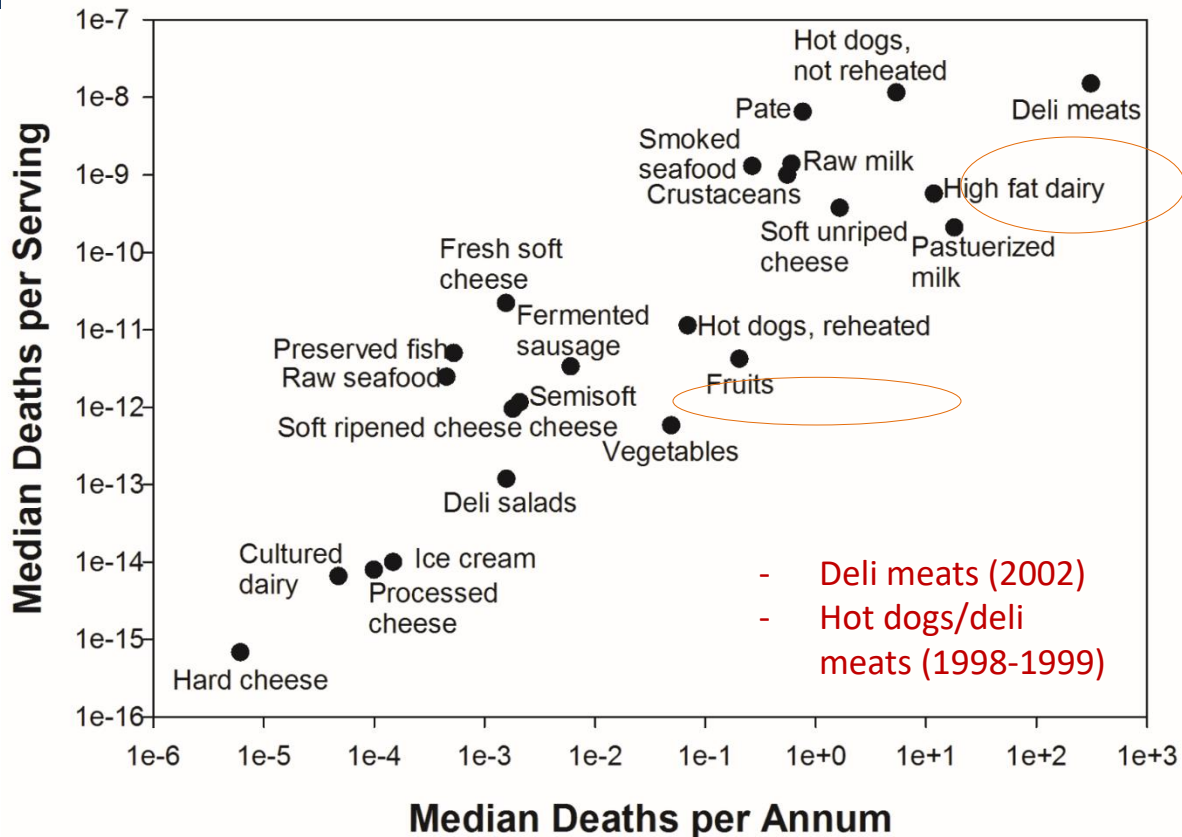


Application of Risk
Assessment to Guide
Policies & Inspection
Activities

Food Safety and Inspection Service

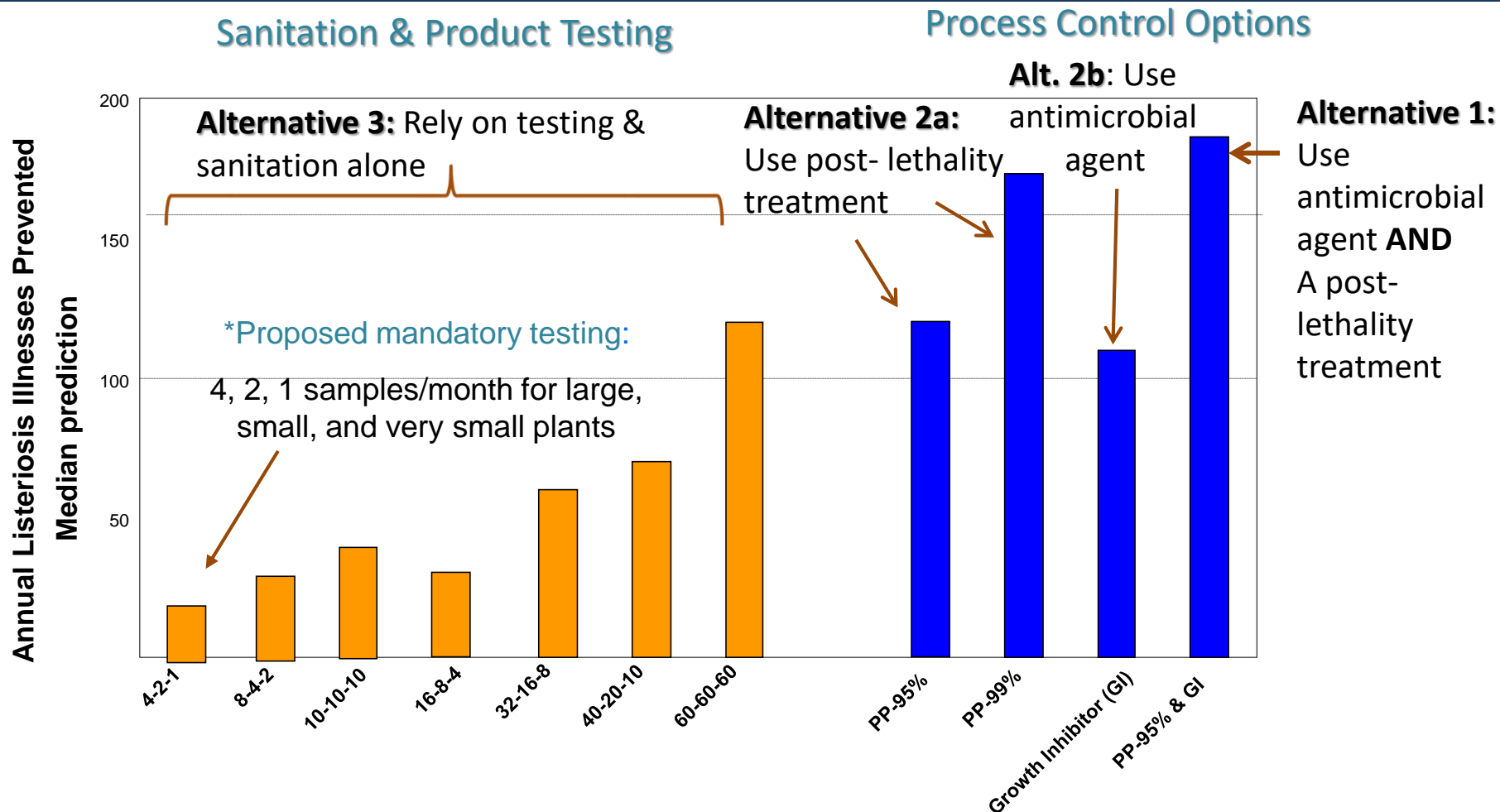
Which Foods Posed the Greatest Risk of Listeriosis? – “Then”

- FDA/FSIS *Listeria* risk assessment (2001, updated 2003) identified deli meats as posing the greatest risk of listeriosis.



Historical outbreaks compared to the FDA/FSIS risk assessment findings.

Food Safety and Inspection Service: How Effective Are *Lm* Controls and Sanitation in Mitigating Risk?

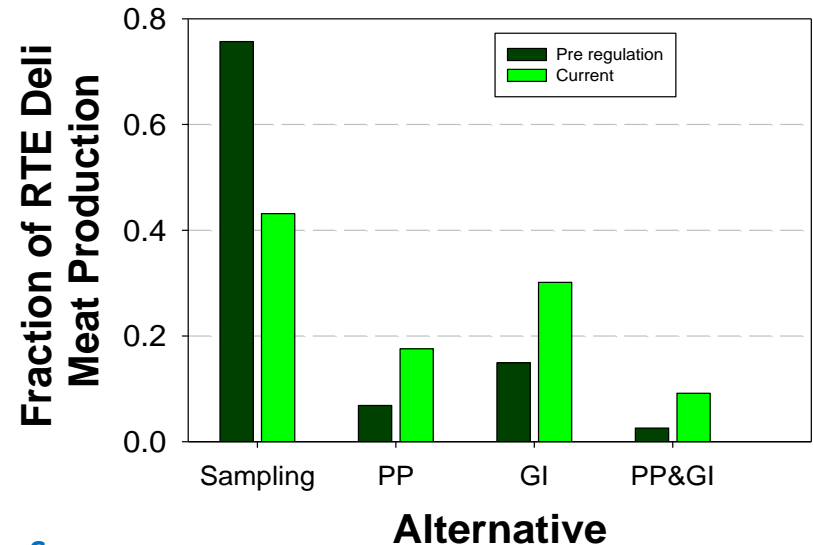


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Risk-Based Inspection: *Listeria monocytogenes*



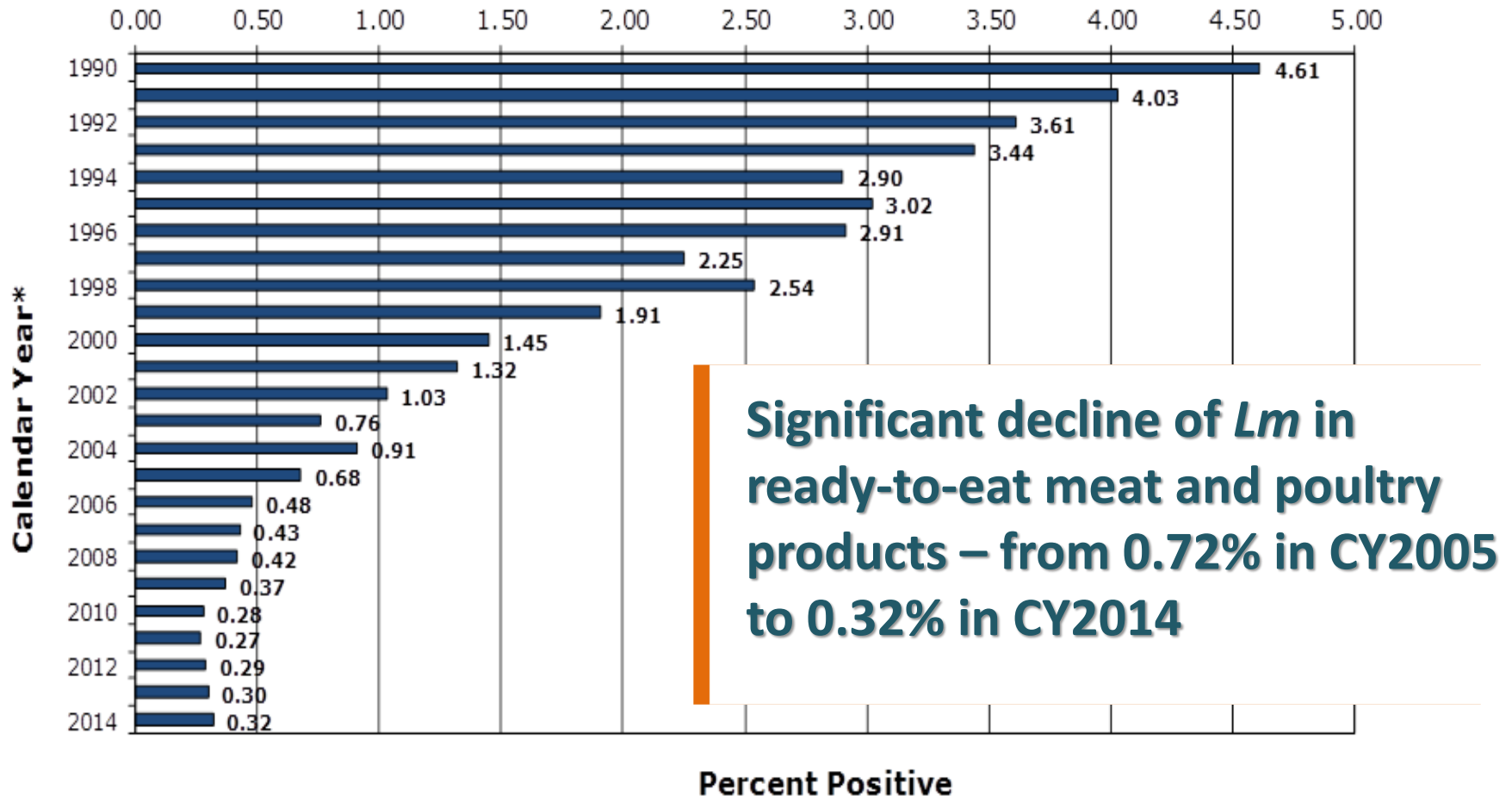
- Risk ranking algorithm:
 - type of product being made
 - production volume
 - 6 month sampling history
- Schedule sample collection according to this risk ranking monthly
- Allows FSIS to target finite resources at those establishments that are most likely to produce contaminated product
- Provides incentive for establishments to adopt effective *Lm* control measures



Source:

http://www.fsis.usda.gov/PDF/RBVS_Risk_Assess_Jun07.pdf

Food Safety and Inspection Service: Impact of Risk-Based Inspection Activities



*FSIS results of routine regulatory testing of finished RTE meat and poultry products analyzed for *Lm* (1990-2014). Approximately 4,000-10,000 samples taken annually.

Food Safety and Inspection Service:

Listeriosis Outbreaks: RTE Meat and Poultry Products

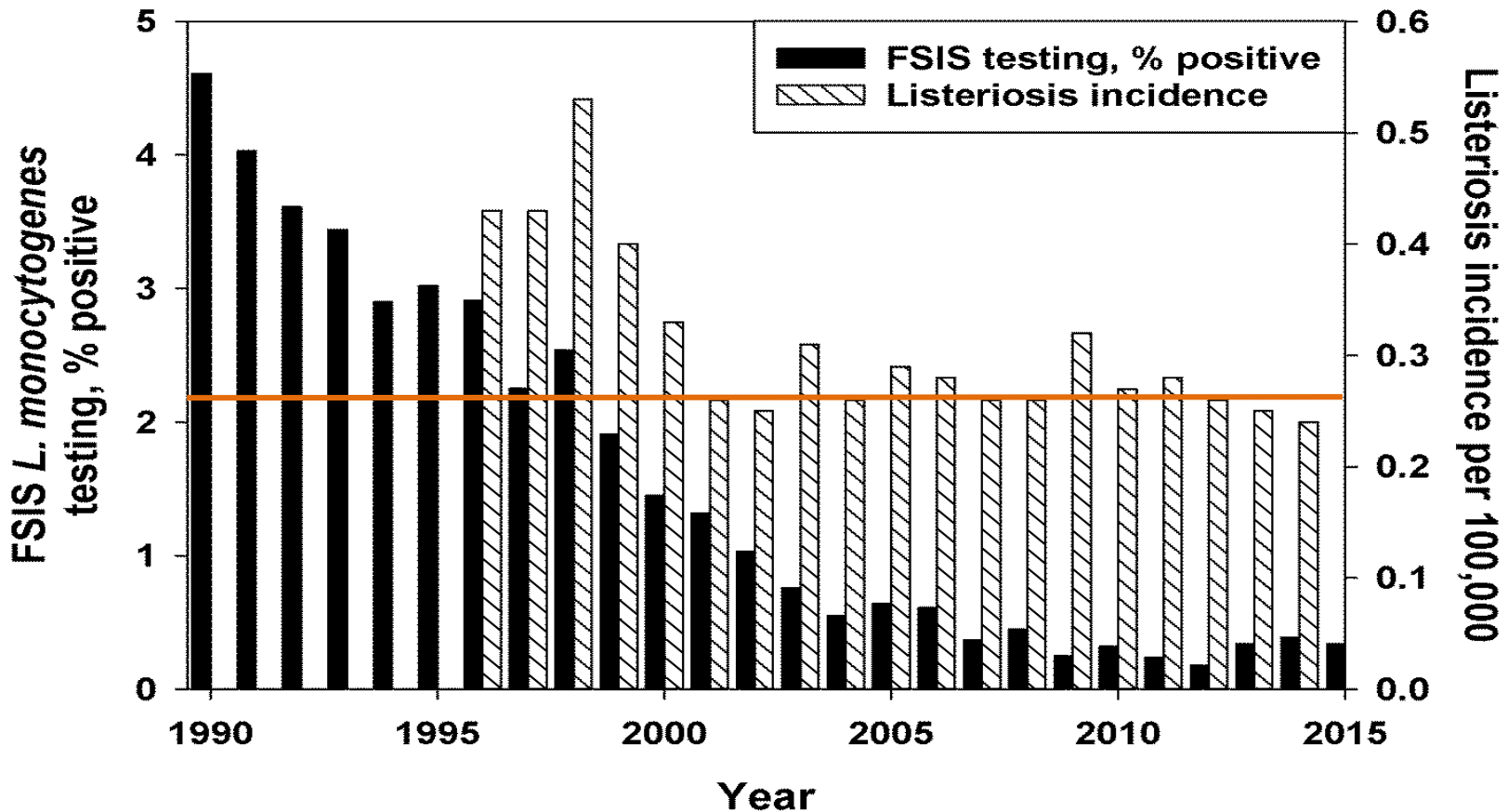
Year	Hot Dogs		Deli Meats	
	Cases	Deaths	Cases	Deaths
1998	112	14	0	0
1999	4	0	7	2
2000	0	0	30	4
2001	0	0	28	0
2002	0	0	54	8
2003	0	0	0	0
2004	0	0	0	0
2005	0	0	13	1
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	8	2
2011	0	0	0	0

**Adapted from Cartwright et al. 2013*

- ✓ No listeriosis outbreaks associated with federally inspected RTE meat and poultry products in over a decade.

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Why the Plateau in Listeriosis Cases?

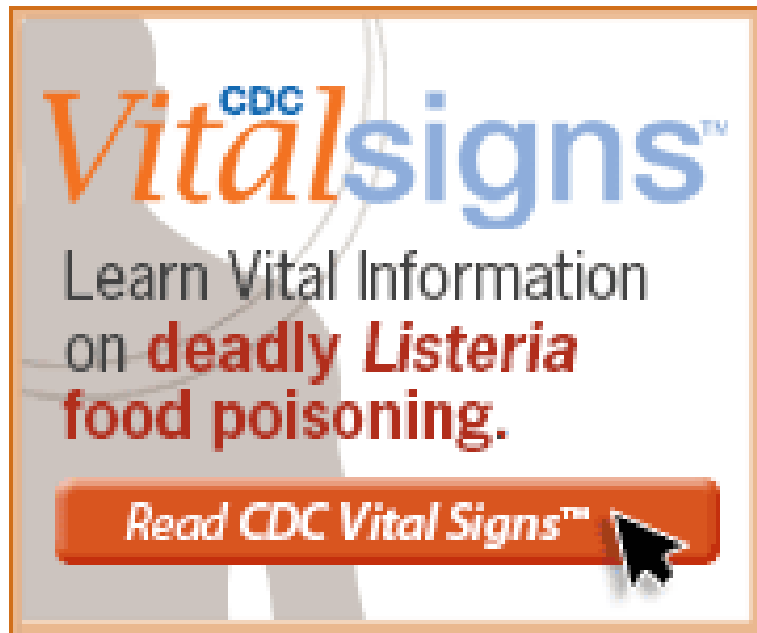


*USDA-FSIS regulatory testing results in RTE products (<http://www.fsis.usda.gov/wps/wcm/connect/d2aedcb2-4890-42fc-9960-57a6a5bf3ecd/Figure-1-RTE-Testing.pdf?MOD=AJPERE>)

**incidence of foodborne listeriosis (<http://www.cdc.gov/foodnet/trends/2014/number-of-infections-by-year-1996-2014.html#table2b>)

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Changing Landscape for Listeriosis Outbreaks



Changing Landscape of Foods Linked to Listeriosis Outbreaks

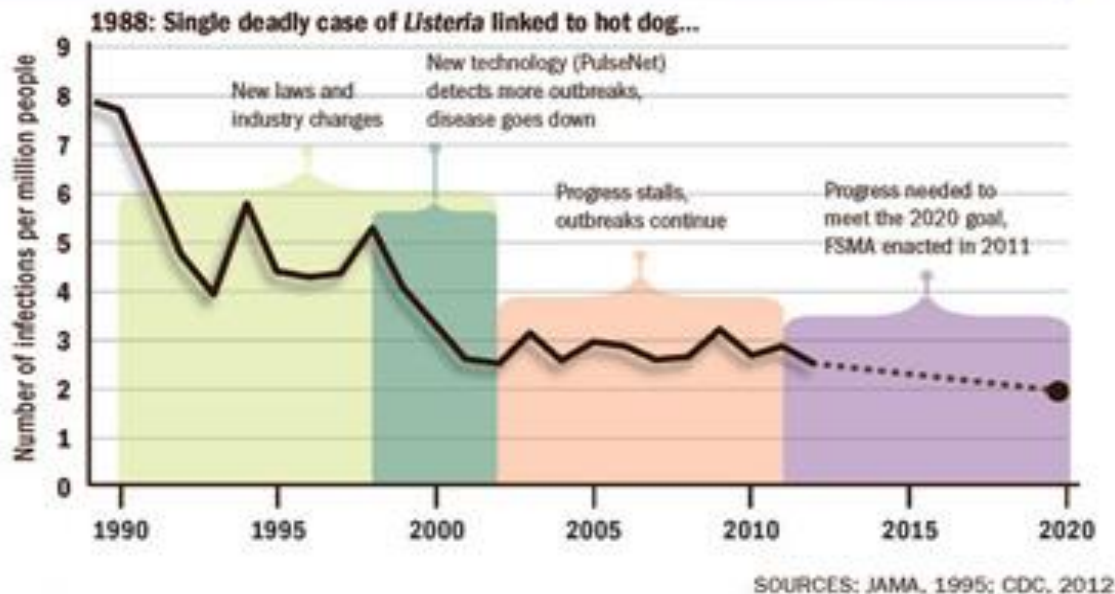
CDC. Vital signs: *Listeria* illnesses, deaths, and outbreaks—United States, 2009-2011. *MMWR* 2013

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Other Contributors to Listeriosis?

Detecting more outbreaks points the way to prevention

Outbreaks from *Listeria* in the 1990's traced to hot dogs, and later to deli meats, led to changes that made processed meats safer and reduced the number of such outbreaks. But, *Listeria* infection rates have not gone down since 2001.



Improvements in Outbreak Detection

- Listeria Initiative, initiated in 2003
- Whole Genome Sequencing of clinical and food isolates (started: 2011)

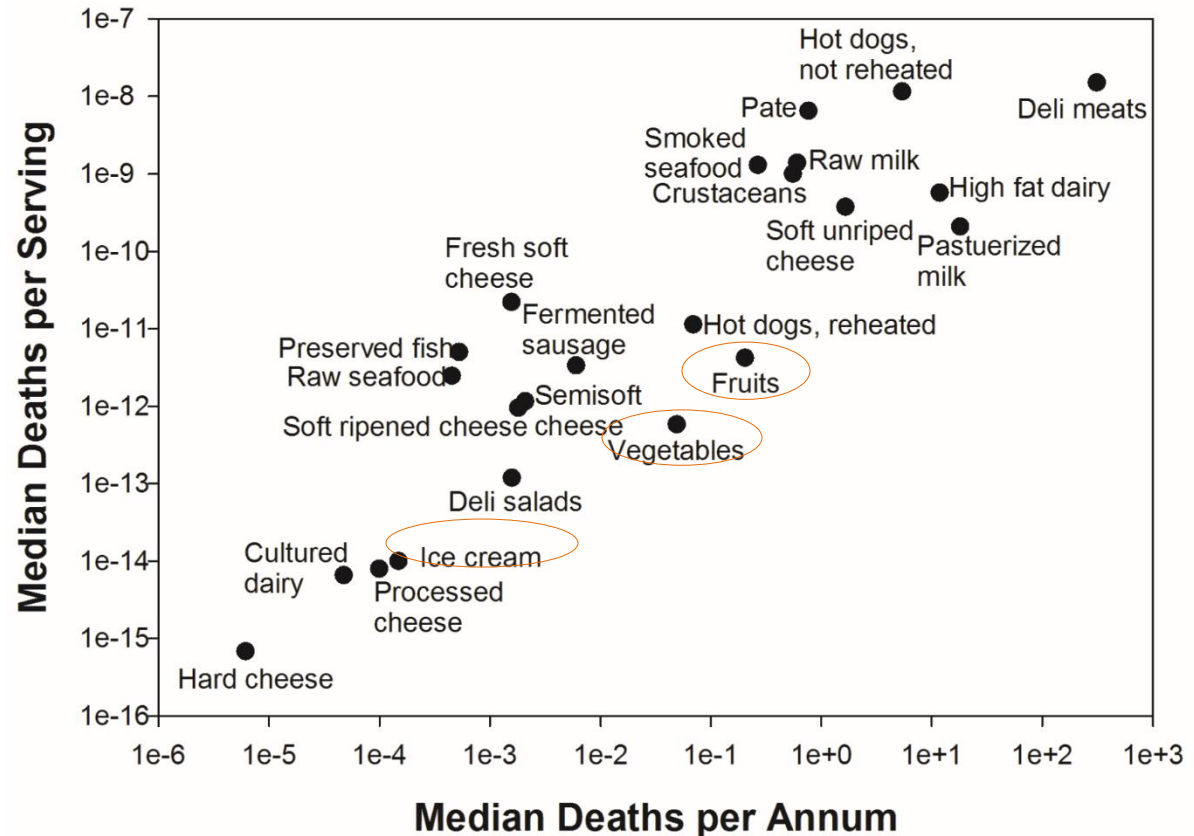
Downstream contamination (retail)? Other food vehicles?

Food Safety and Inspection Service:

Which Foods Posed the Greatest Risk of Listeriosis? – “Now”

- Changing landscape of foods linked to listeriosis outbreaks:

- Better Lm controls for meat & poultry products
- Improved outbreak detection/food vehicle identification (WGS)



Current outbreaks compared to the findings from the 2003 risk-ranking of ready-to-eat foods.

Food Safety and Inspection Service:

Where do we go from here?

