



Lessons from USDA's Mandatory HACCP Rule for Meat and Poultry

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Presentation Overview

- What is the relationship between HACCP regulations and the FSMA preventive controls rule?
- What were the economic effects of the HACCP regulation on the meat & poultry industry?
 - Original regulatory impact analysis estimates versus post-regulation studies
 - Analysis of closure of meat and poultry plants in response to the regulation
- What are the implications of the meat and poultry HACCP experience for the FSMA preventive controls rule?

History of Mandatory HACCP Regulations for Food Manufacturers and Processors

- **Seafood:** 3,500 domestic processors, began in 1998 (FDA)
- **Meat & poultry:** 7,300 domestic processors (state and federal inspection) and 950 foreign, began in 1999 (USDA)
- **Juice:** 2,300 domestic processors, began in 2001 (FDA)
- **Dairy:** voluntary starting in 2002 with Pasteurized Milk Ordinance already in place (FDA)
- **Egg products:** 80 domestic processors, regulation still in development (USDA)
- All other processors (97,600 domestic and 109,200 foreign) fall under FSMA but refers to “preventive controls” rather than “HACCP”

Meat & Poultry HACCP vs Preventive Controls for Food Manufacturers

- Basic idea of HACCP rules versus the Preventive Controls rule is the same
 - Plants are required to understand the hazards reasonably likely to occur in the plant and put in place a plan to minimize or prevent the hazards.
- HACCP = hazard analysis and critical control points
 - Conduct a hazard analysis
 - Determine CCPs
 - Establish critical limits for CCPs
 - Establish system to monitor CCPs
 - Establish corrective actions if CCP is not under control
 - Establish verification procedures
 - Establish recordkeeping procedures

Meat & Poultry HACCP versus Preventive Controls for Food Manufacturers

- 1996 Meat and poultry HACCP regulation
 - Required all plants develop and implement Sanitation Standard Operating Procedures (SSOPs) and HACCP plans
 - Established performance standards for pathogenic microorganisms (specifically *Salmonella*)
 - Required at least one antimicrobial treatment in slaughter plants
 - Set standards for cooling red meat carcasses
- Preventive controls rule
 - Requires plants to develop and implement a “written food safety plan” including all of the same 7 components of HACCP
 - Exempts some plants based on limited risk and modifies requirements for smallest plants
 - Clarifies that Good Manufacturing Practices must address cross-contamination of food by allergens

Meat & Poultry HACCP Implementation

- Final rule was published on July 25, 1996.

Date	Affected Plants	Requirements
January 1997	All Plants	<ul style="list-style-type: none"> • Sanitation standard operating procedures (SOPs) • Generic <i>E. coli</i> carcass testing
January 1998	Large Plants (>500 employees)	<ul style="list-style-type: none"> • HACCP • <i>Salmonella</i> testing of some raw products
January 1999	Small Plants (10-500 employees)	<ul style="list-style-type: none"> • HACCP • <i>Salmonella</i> testing of some raw products
January 2000	Very Small Plants (<10 employees or <\$2.5 million in annual sales)	<ul style="list-style-type: none"> • HACCP • <i>Salmonella</i> testing of some raw products

Estimates of the Costs of Meat & Poultry HACCP

- Ex-ante estimates from the Regulatory Impact Analysis (1996)
 - Per-plant costs
 - Development & implementation: \$10K-\$13K
 - Annual: \$8K-\$9K
 - Included HACCP plan development, training, recordkeeping, and pathogen testing
- Ex-post estimates from Ollinger, Moore, Chandran (2004) based on survey data
 - Per-plant costs
 - Development & implementation: \$259K--\$639K
 - Annual: \$119K-503K
 - Also included costs of new capital equipment and hiring more workers

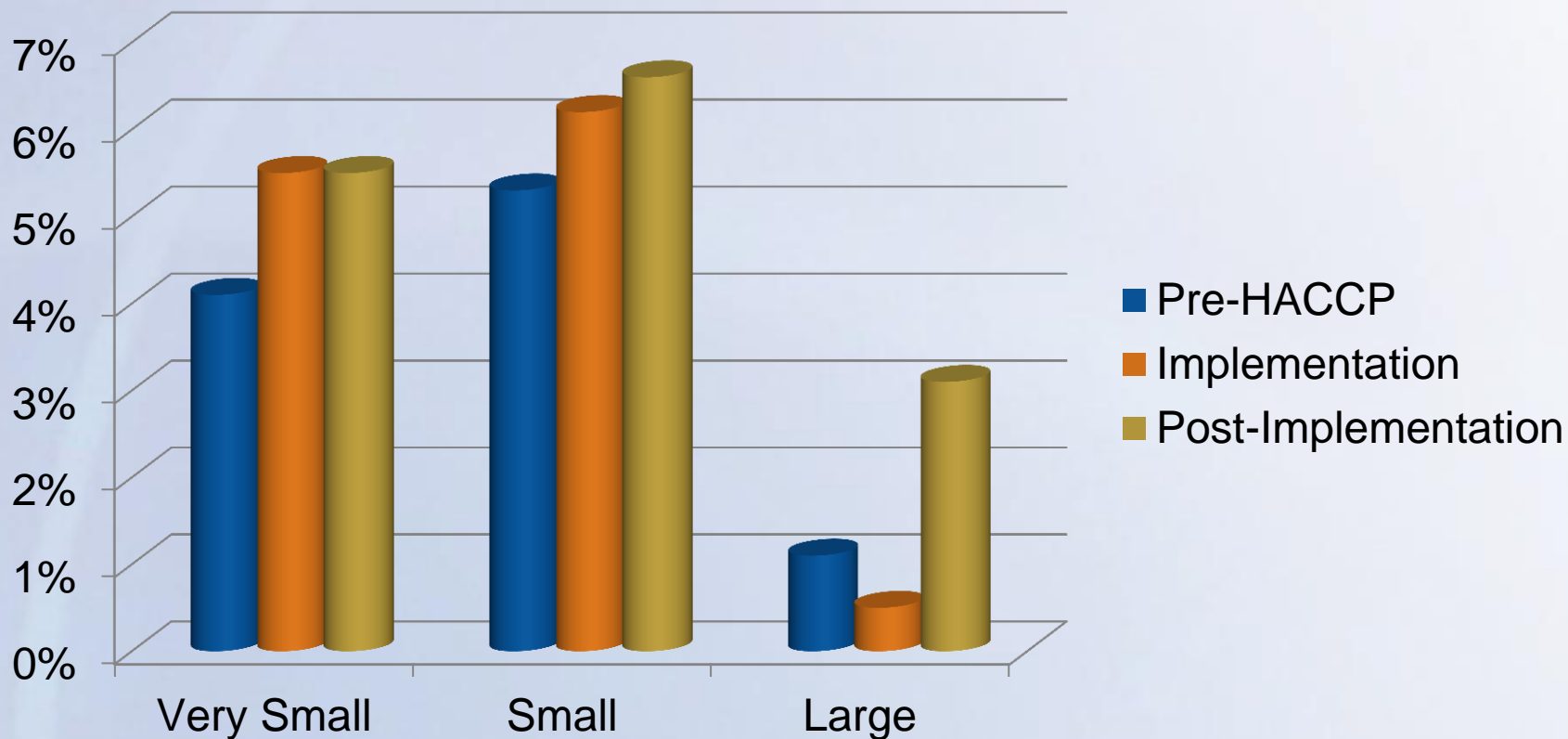
Evaluation of Meat & Poultry HACCP

- Final rule required FSIS to conduct an ex-post evaluation of the regulation
- Areas covered by the evaluation study:
 - Foodborne illness reduction
 - Inspection effectiveness and efficiency
 - Consumer confidence in product safety
 - Animal and egg food safety production practices
 - Domestic and international economic effects
 - Productivity of U.S. meat and poultry plants
 - Entry and exit of meat and poultry plants (rates and factors affecting)
 - Imports and exports of meat and poultry

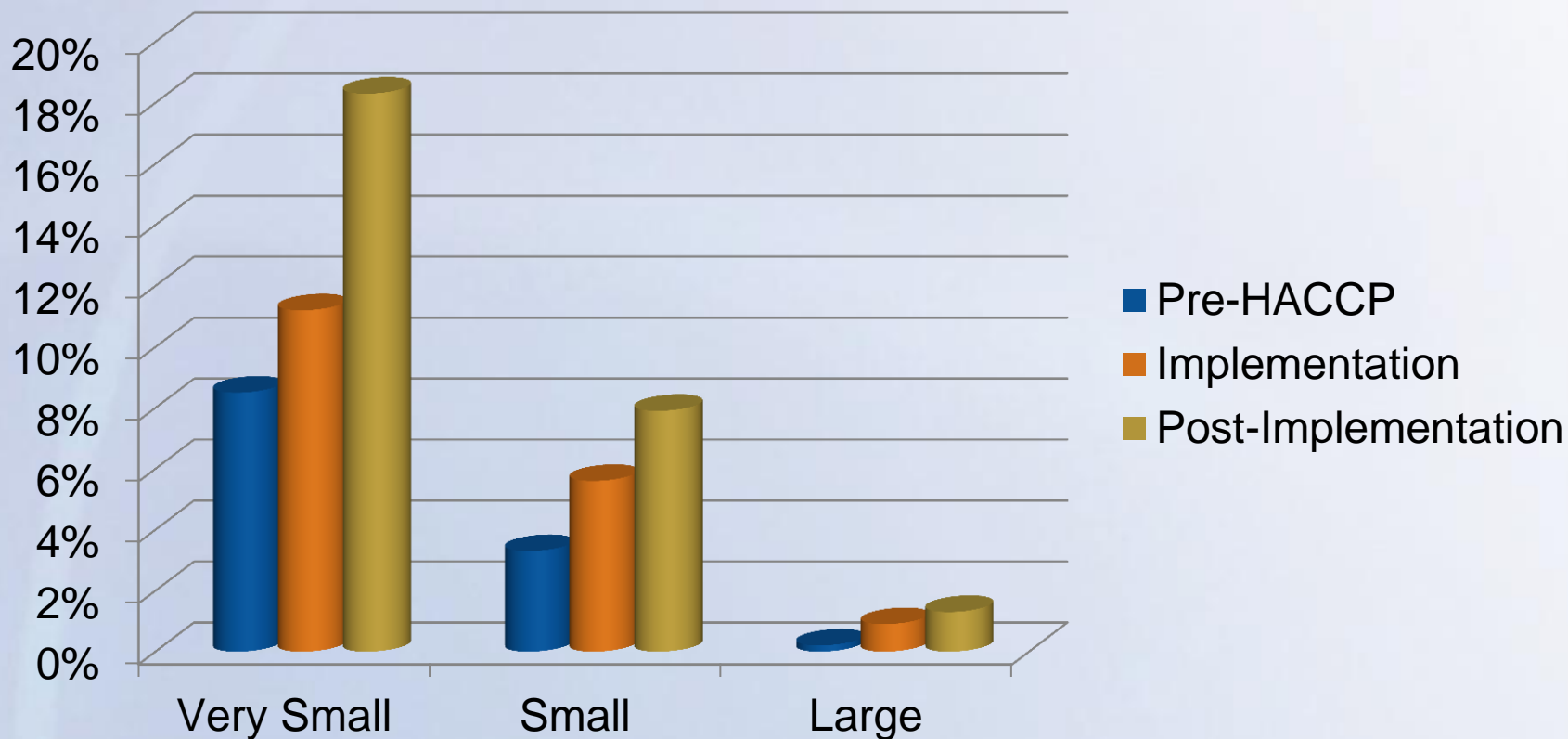
Did the HACCP regulation cause meat and poultry plants to close?

- Plants might close because
 - Lack the technical knowledge to implement HACCP
 - Lack the financial resources to develop a HACCP plan, make changes to plant operations, and train workers
 - Increased costs of production decrease profitability
- Used FSIS's meat and poultry inspection database to estimate rates of plant exit and factors affecting exit
 - Pre-HACCP: 1993-1996
 - Implementation: 1996-2000
 - Post-implementation: 2000-2002

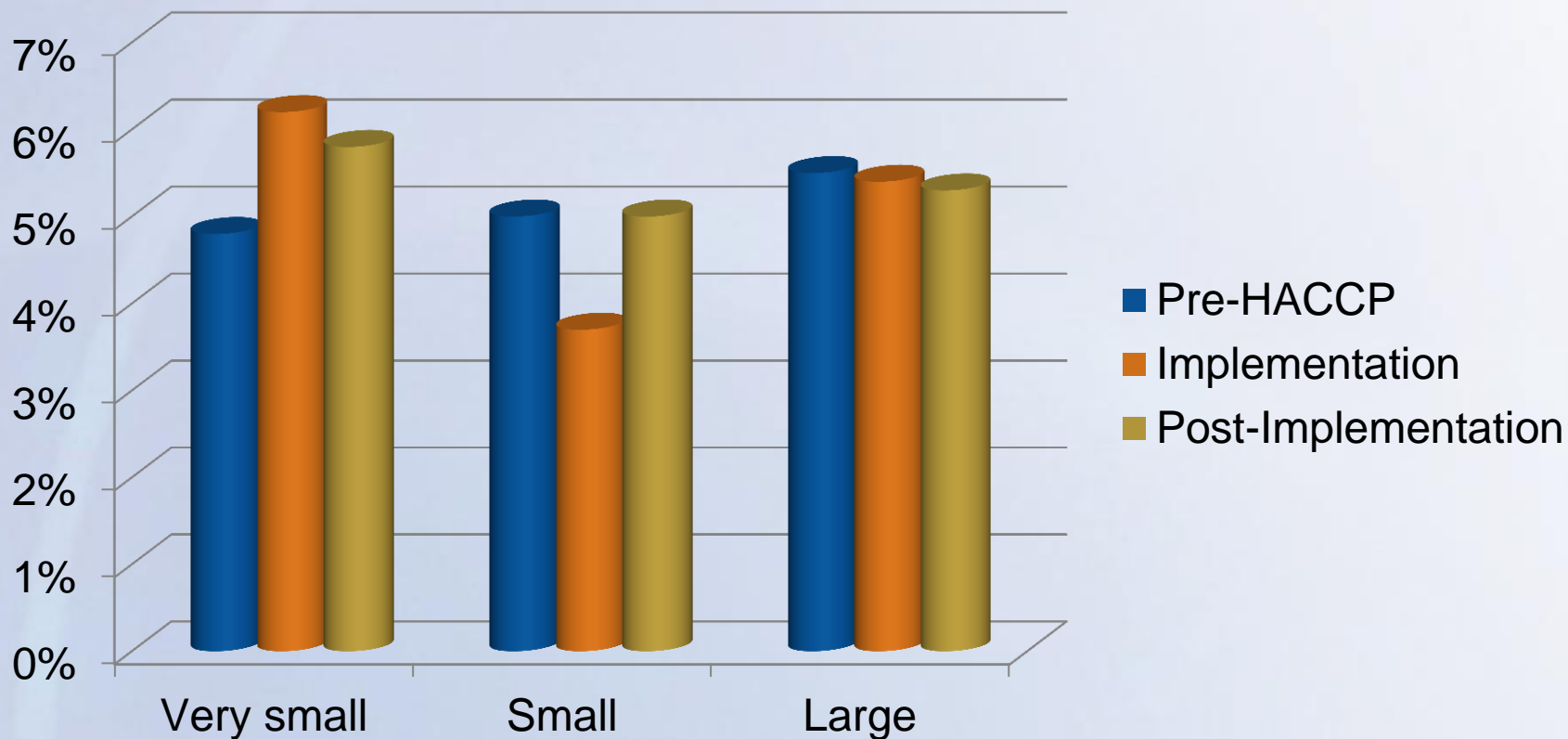
Annualized Rates of Exit: Meat Slaughter Plants



Annualized Rates of Exit: Poultry Slaughter Plants



Annualized Rates of Exit: Meat and Poultry Processing-Only Plants



Results of Probit Analyses Controlling for Other Factors

- **Effects of HACCP Regulation:**

- **Meat Slaughter**—statistically significant increased exit pre-HACCP to implementation for very small and small plants
- **Poultry Slaughter**—statistically significant increased exit pre-HACCP to post-implementation for very small and small plants (and also pre-HACCP to implementation for small plants)

- **Other Factors Affecting Exit:**

- **Age of plant**—reduced exit rates for older plants up to a point, then exit rate begins to increase
- **Volume**—reduced exit rate for plants with greater slaughter volumes
- **Regional competitiveness**—higher exit rate for smaller plants in regions with higher market concentration
- **Input prices**—higher exit rate for plants in regions with higher livestock prices

What are the implications for the FSMA preventive controls rule?

- Substantially different situation for meat and poultry versus foods under FSMA preventive controls
 - **Number of affected plants and range of products produced**—greater implementation challenges for FSMA preventive controls
 - **Frequency of inspectors in the plants**—plays a key role in communicating requirements of the regulation and providing technical assistance and education
 - **Extent of plant level data for monitoring and analysis**—due to inspection procedures, more extensive and up-to-date data on meat and poultry plants
 - **Pathogen testing results for monitoring**—FSIS has access to *Salmonella*, *Campylobacter*, *E. coli* O157:H7 (raw ground beef), and *Listeria monocytogenes* (RTE products) test results

References on Plant Exit

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More Information

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