



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

# Public Health-Based Food Safety Performance Measures: Development and Use at FSIS

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COLLABORATIVE FOOD SAFETY FORUM

Collaborative Implementation of FSMA Workshop

*Public Health-Based Metrics*

## Food Safety and Inspection Service:

### Overview

- Development of FSIS All-Illness Measure
- Linking Agency Policies to Meeting Agency Goals: Linking Performance Standards to Healthy People 2020

## Food Safety and Inspection Service:

### FSIS All Illness Measure

- Developed in 2009, the All Illness Measure introduced the concept of measuring progress in terms of reduction in foodborne illnesses associated with FSIS-regulated products; i.e., a **Public Health-Based Metric**
- The All Illness Measure is:
  - summary measure of all *Salmonella*, *E. coli* O157:H7, and *Listeria monocytogenes* (*Lm*) foodborne illnesses attributed to FSIS-regulated products (meat, poultry, processed egg products)
  - Previously reported progress in volume-weighted percent positive rates

## Food Safety and Inspection Service:

### FSIS All Illness Measure

- Relationship to Healthy People 2020 (HP2020): Key long-term driver of performance
  - *Salmonella*
  - *E. coli* O157:H7
  - *Lm*
- Included as corporate measure in FSIS 2011-2016 Strategic Plan and reported in:
  - OMB Agency Priority Goal (*Salmonella* Illnesses)
  - Strategic Objective Annual Report (SOAR)
  - USDA Performance and Accountability Report
  - FSIS Year-in-Review

## Food Safety and Inspection Service: All Illness Measure Estimation Methodology

- All Illness Measure uses several data inputs:
  - Case rate: CDC's FoodNet
    - Annualized CDC estimates provided to FSIS quarterly, but lag a quarter
  - Attribution Fraction: CDC's Foodborne Outbreak Surveillance System (FDOSS)
    - Simple foods identified in outbreaks used to determine FSIS proportion of illnesses
    - Data released annually, but lags by 18 months--2 years
  - U.S Population Estimate: Census
    - Fixed 2009 population estimate used
  - Scaling Factor: Scallan, et. al. 2011
    - Fixed scaling factor, pathogen-specific
    - Prior to Scallan, et. al., factors from Mead, et. al. 1999 were used

# Food Safety and Inspection Service:

## All Illness Measure – Step 1: Estimate the Baseline Illnesses

Pathogen	2007-2009 Baseline CDC FoodNet Case Rate (Cases/100,000 Persons)	2005-2007 FSIS Attribution	FSIS Scaling Factor	Population	Estimated Baseline FSIS Illnesses 2007-2009				
Formula:	<b>A</b>	<b>×</b>	<b>B</b>	<b>×</b>	<b>C</b>	<b>×</b>	<b>D</b>	<b>=</b>	Estimated Illnesses
<i>Salmonella</i>	15.42	35.7%	24.5	307 M	413,965				
<i>Lm</i>	0.30	48.7%	2	307 M	897				
<i>E. coli</i> O157:H7	1.10	37.3%	17.1	307 M	21,540				
<b>Total</b>					436,401				

## Food Safety and Inspection Service:

### All Illness Measure – Step 2: Calculate Targets

- FSIS illness FY2020 targets anchored to pathogen-specific HP2020 goals
  - *Salmonella*: 25%
  - *Lm*: 25%
  - *E. coli* O157:H7: 50%
- Targets for the years and quarters between baseline and FY2020 are calculated using a linear extrapolation from baseline to FY2020
- The total number of illnesses for each pathogen are summed to arrive at the total illness target for each year



Food Safety and Inspection Service:

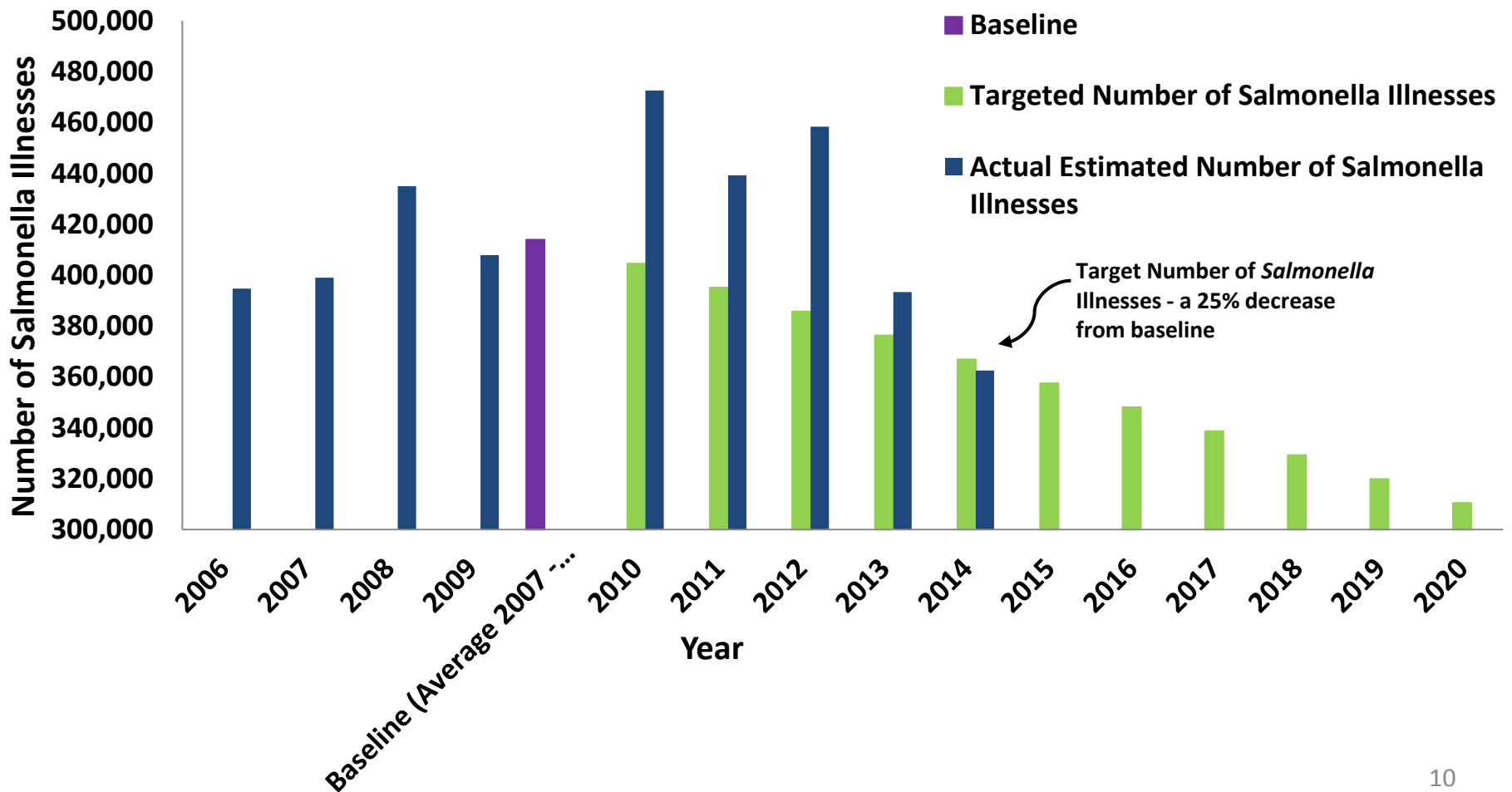
## All Illness Measure – Step 3: Track Progress

### Track progress (quarterly and annually)

- Estimate the number of illnesses for each pathogen quarterly:
  - Quarterly (annualized) CDC FoodNet illness case rates for each pathogen
  - Annual attribution fraction (rolling 3-year average)
- The total number of illnesses for each pathogen are summed to arrive at the total illness for that quarter

# Food Safety and Inspection Service: Salmonella: Baseline, Targets, and Measures

Targeted and Actual Estimated Number of *Salmonella* Illnesses

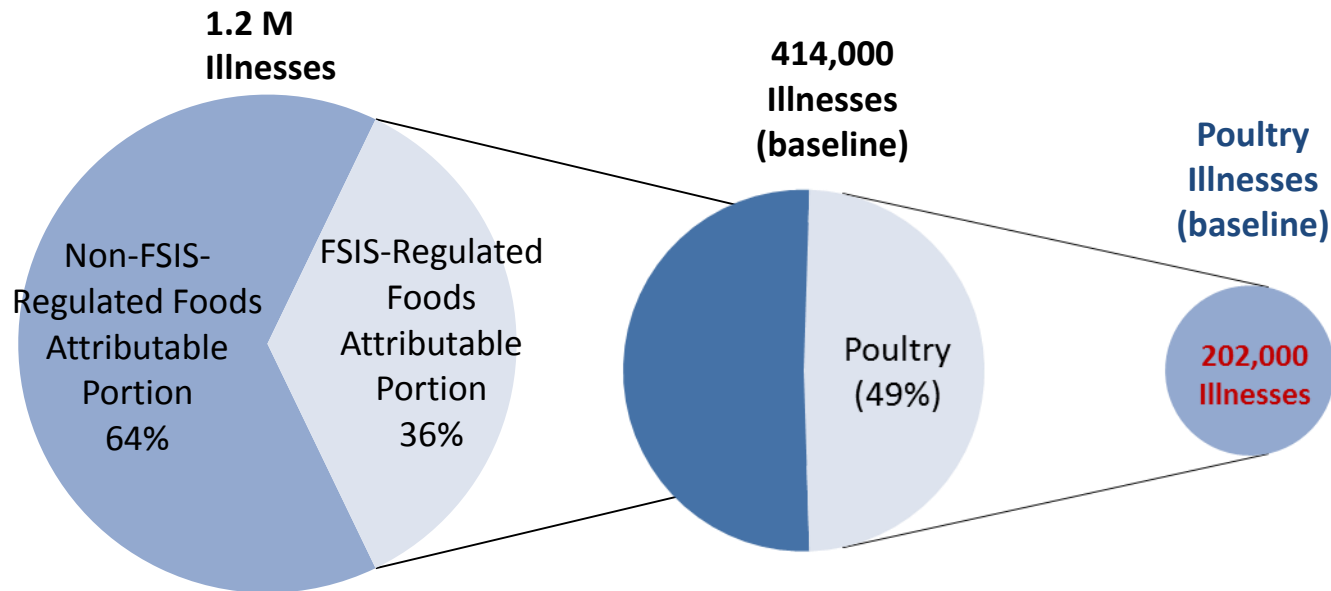


# Food Safety and Inspection Service

## *Salmonella* Action Plan

- FSIS is taking a systematic approach to meeting that *Salmonella* goal, with much of that plan delineated in its *Salmonella* Action Plan (SAP)
  - Developed by the Strategic Performance Working Group with substantial input from across the agency
  - Specific actions for FSIS to undertake—organized in 10 categories—to decrease *Salmonella* illnesses from FSIS-regulated products
  - **SAP included developing performance standards for poultry products linked to HP 2020**
    - Target of reducing *Salmonella* Illnesses by about 100,000<sup>11</sup>

# Food Safety and Inspection Service: Public Health-Based Performance Standards - Salmonellosis Attribution

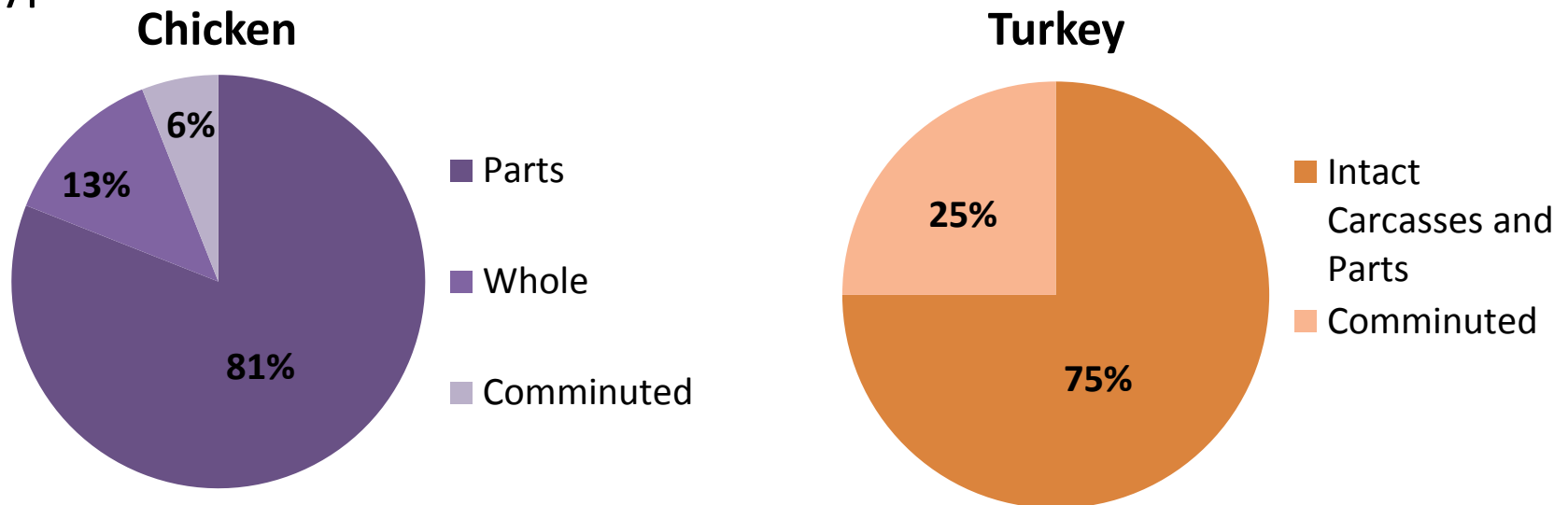


- At baseline about 200,000 illnesses from poultry
- For a 25% reduction, target about a 50,000 illness reduction from poultry

## Food Safety and Inspection Service:

### Public Health-Based Performance Standards - Breakdown of Chicken and Turkey Products by Production Volume

- Use a prevalence-based risk assessment method to develop performance standards for FSIS-regulated products that explicitly are designed to meet HP2020 (i.e., reduction of about 50,000 illness from poultry); attributing illnesses to specific product types



# Food Safety and Inspection Service:

## Public Health-Based Performance Standards - Risk Assessment Output

	Allowable Positives (52 total)	Expected Illnesses Avoided (Uncertainty)	Establishments Initially Failing Standard	Production Volume Initially Failing
<b>Option 1:</b> 25% Illness Reduction Most-likely Distribution 40% initially failing pass	12	2,600 (1,600-3,900) (25%)	70%	95%
<b>Option 2:</b> 25% Illness Reduction Most-likely Distribution 30% initially failing pass	5	2,600 (1,600-3,900) (25%)	79%	99%
<b>Option 3:</b> 30% Illness Reduction Most-likely Distribution 50% initially failing pass	13	3,100 (2,000-4.700) (30%)	62%	93%

# Food Safety and Inspection Service: Federal Register Notice (FRN)

- Notice of proposed performance standards published in *Federal Register* Vol. 80, No. 16. Monday, January 26, 2015
- Link to FRN and associated materials:

<http://www.fsis.usda.gov/wps/portal/fsis/topics/regulations/federal-register/federal-register-notices>



## Notices

**Federal Register**  
Vol. 80, No. 16  
Monday, January 26, 2015

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

### DEPARTMENT OF AGRICULTURE

**Food Safety and Inspection Service**  
[Docket No. FSIS-2014-0023]

**Changes to the Salmonella and Campylobacter Verification Testing Program: Proposed Performance Standards for Salmonella and Campylobacter in Not-Ready-to-Eat Comminuted Chicken and Turkey Products and Raw Chicken Parts and Related Agency Verification Procedures and Other Changes to Agency Sampling**

assessment using a moving window of sampling results.

FSIS will proceed with implementing the routine sampling of raw chicken parts and the changes to specified verification procedures on the dates announced in this notice. However, FSIS is seeking comments on its implementation strategy as part of its effort to continuously assess and improve the effectiveness of Agency policy.

**DATES:** Submit comments on or before March 27, 2015. In March 2015, the Agency plans to begin routine sampling of raw chicken parts as one of the several routine verification testing programs. Also, in March 2015, the Agency plans to begin using the moving window approach (explained below) rather than the consecutive day approach for assessing all verification testing.

In March 2015, FSIS intends to begin exploratory sampling of raw pork products. In March 2015, FSIS also

time. Comments may be submitted by one of the following methods:

**Federal eRulemaking Portal:** This Web site provides the ability to type short comments directly into the comment field on this Web page or attach a file for lengthier comments. Go to <http://www.regulations.gov/>. Follow the on-line instructions at that site for submitting comments.

**Mail, CD-ROMs:** Send to Docket Clerk, U.S. Department of Agriculture, Food Safety and Inspection Service, Patriots Plaza 3, 355 E Street SW., Mailstop 3782, Room 8-163B, Washington, DC 20250-3700.

**Hand- or courier-delivered submittals:** Deliver to Patriots Plaza 3, 355 E Street SW., Room 8-163A, Washington, DC 20250-3700.

**Instructions:** All items submitted by mail or electronic mail must include the Agency name and docket number FSIS-2014-0023. Comments received in response to this docket will be made available for public inspection and

# Food Safety and Inspection Service

## Public Health-Based Performance Standards - Risk Assessment to Target HP2020 Illness Reductions

- Target about a 50,000 poultry illness reduction to meet the HP2020 *Salmonella* goal
- Existing and proposed voluntary performance standards result in a 27% reduction in salmonellosis

Poultry illnesses	Attributable illnesses	Percent reduction	Reduction goals
Chicken, whole	20,600	12%	2,500
Chicken, parts	133,600	34%	45,000
Chicken, comminuted	10,300	30%	3,100
Turkey, intact	22,600	1.5%	330
Turkey, comminuted	7,500	32%	2,400
<b>Total</b>	<b>~200,000</b>	<b>27%</b>	<b>~54,000</b>



# Food Safety and Inspection Service: **Acknowledgements**

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- FSIS field and lab staff and other FSIS program areas

## **FSIS – ODIFP (DAIS)**

Chris Alvares

# QUESTIONS?