



United States Food Safety
Department of and Inspection
Agriculture Service

Progress Report on *Salmonella* and *Campylobacter* Testing of Raw Meat and Poultry Products, 1998-2011¹

Executive Summary

In calendar year 2011, FSIS analyzed 26,345 verification samples across eight meat and poultry product classes with the following percent positive rate of *Salmonella* per product class: young chicken (6.5%), market hog (3.3%), cow/bull (0.8%), steer/heifer (0.5%), ground beef (2.4%), ground chicken (30.9%), ground turkey (12.3%) and turkey (2.4%). In the third quarter of 2011, sampling was discontinued until further notice for three product classes: market hog, cow/bull, and steer/heifer. The Agency believes that the higher the percent positive rate, the greater the potential for the public to consume a product that can cause foodborne illness. FSIS schedules approximately 75 sample sets monthly using a risk-based algorithm to target establishments demonstrating variable or poor process control (i.e, establishments with high percent positive rates). Previous *Salmonella* Annual Reports can be found on the FSIS web site.

Since 2006, FSIS has focused sampling on raw carcass product classes believing that improvement in process control in these product classes will result in improvement in process control in raw ground product classes. As of December 2011, 84% of establishments are in Category 1. Based on five product classes, the following percentages of establishments are in Category 1: young chicken (87%), ground beef (83%), ground chicken (75%), ground turkey (100%), and turkey (82%).

The Agency established a new Performance Standard for *Salmonella* for young chicken and turkey carcasses as of July 1, 2011, in addition to initiating the Performance Standard for *Campylobacter* on young chicken and turkey carcasses. Summary information related to *Campylobacter* verification sampling will be published at a later date once a sufficient volume of data has been accrued.

This annual report also introduces summary information related to *Salmonella* Enteritidis (SE) test results for Young Chicken. For example, the data show that SE percent positive is higher during the winter months (November-February) and is more prevalent in the Northcentral area of the United States.

¹ All years listed are calendar years (CY)

2011 Annual Report

The Food Safety and Inspection Service (FSIS) uses data from its regulatory testing programs to monitor the effectiveness of its Pathogen Reduction/Hazard Analysis and Critical Control Point Systems Final Rule, and to assess process control in individual establishments. The U.S. Department of Health and Human Services has incorporated the target of 11.4 cases of salmonellosis/100,000 persons into the Healthy People 2020 objectives aimed at a 25 percent reduction in human illnesses, which FSIS recognizes as appropriate guidance for the Agency's strategic planning to strengthen public health protection.

In 1996, FSIS established PR/HACCP to verify that establishments demonstrate consistent process control for preventing, eliminating, or reducing the contamination of raw meat and poultry products with disease-causing bacteria, by setting *Salmonella* performance standards that slaughter establishments and establishments that produce raw ground products should meet. Raw products with established performance standards or guidance include: carcasses of cows/bulls, steers/heifers, market hogs, young chickens and young turkeys. Processed products measured by performance standards include: ground beef, ground chicken, and ground turkey. The performance standards are based on the prevalence of *Salmonella* as determined from the Agency's nationwide microbiological baseline studies, which, except for the young chicken and turkey carcass product classes, were conducted prior to PR/HACCP implementation. The performance standards and guidance are expressed in terms of the maximum number of *Salmonella*-positive samples acceptable per sample set. The number of samples in a sample set varies by product, and the maximum number of positive samples acceptable in a set provides an 80% probability of an establishment passing when it is operating at the standard.

Prior to 2006, there were two phases of the FSIS regulatory program for *Salmonella* in raw products: non-targeted and targeted testing. Non-targeted or "A" set tests were collected at establishments randomly selected from the population of eligible establishments, with a goal of scheduling every eligible establishment at least once a year. Other codes (such as "B", "C", and "D") represented sample sets collected from establishments targeted for follow-up testing following a failed set. Beginning with the third 2006 quarterly report, reports have data summarized from all sets collected. (Note: Earlier reports have not been retrospectively changed). Consequently, under Table A1, the annual reports from 2005 and earlier reflect results from only the "A" set samples.

In February 2006, FSIS issued a federal register notice: "*Salmonella* Verification Sample Result Reporting: Agency Policy and use in Public Health Protection" announcing how FSIS would report and use results from its *Salmonella* verification sampling program for meat and poultry establishments. In this Notice, the Agency announced its intention to redirect its *Salmonella* verification sampling program and announced 11 new initiatives to encourage establishments to reassess their food safety systems to achieve and maintain consistent process control. As one of these new initiatives, FSIS increased testing frequency in

establishments with variable or highly variable process control compared to those showing consistent process control.

Since June 2006, establishments have been scheduled based on risk-based criteria designed to focus FSIS resources on establishments with the most samples positive for *Salmonella* and the greatest number of samples with serotypes most frequently associated with human salmonellosis, (relative to each product class) as defined by CDC.²

Furthermore, establishments are grouped into one of three categories. Category 1 includes establishments whose two most recent *Salmonella* set results are equal to or less than 50% of the performance standard or guidance. The Agency considers these establishments to demonstrate consistent process control. Category 2 includes establishments where at least one of their two most recent set results was greater than 50% of the performance standards or guidance without exceeding it, or they have passed their most recent set but failed the one prior to that one. These establishments are considered to have variable process control. An additional subcategory 2T was created in 2008 under Category 2 (reported in 2008 second quarterly report and onwards). An establishment with its last set \leq 50% of the performance standard or guidance and the prior set at $>$ 50% of the performance standard will now be sub-categorized as 2T, with T standing for transitioning to Category 1. Category 3 includes establishments whose most recent *Salmonella* set result has exceeded the performance standard for its product class. The Agency considers these establishments to display highly variable process control.

Results

This report presents percent positive *Salmonella* sample results and percent sample sets meeting the *Salmonella* performance standards listed by product class and PR/HACCP establishment size for 2011 and previous years (Table A1 and A3). Data is presented in aggregate form for the periods 1998-2003 and 1998-2011 (Table A2 and A4).³

Individual sample results (Table A1) are counted in the year the sample is collected. Sample sets (Table A3) are counted in the year they are completed. For example, samples from a young chicken set collected in 2010 are counted in the 2010 results (Table A1). However if the sample set was completed in 2011, the set was counted in 2011 (Table A3). In Table A5, establishments are listed by product classes and percentage within categories 1, 2T, 2, and 3 for each product class. For young chicken and turkey carcasses, the categories are determined by the *Salmonella* Performance Standard which was in place at the time the verification set was scheduled.

² Restructuring how *Salmonella* sets are scheduled means that comparison of results from 2006 onwards to previous years would not be appropriate.

³ An establishment's HACCP size may change over time; these tables reflect the size of the plant at the time the sample was collected.

Figure B1 compares *Salmonella* percent positive results from 1998 to 2011 with baseline prevalence by product class and year. Percentages of sample sets meeting *Salmonella* performance standards by product class from 1998 to 2011 are presented in Figure B2.

Young Chicken

FSIS continues to direct resources toward testing young chicken establishments. In 2011 (Table A1), 4,744 *Salmonella* samples were analyzed from young chicken establishments. The total percentage of positive samples was 6.5% in 2011, down from 6.7%, 7.2%, 7.3%, and 8.5% in 2010, 2009, 2008, and 2007, respectively. In addition, of the 100 sets completed in 2011 at young chicken establishments, 96% met the *Salmonella* performance standard compared to 94.8 (134 sets completed) in 2010, 95.7% (140 sets completed) in 2009, and 97.3% (149 sets completed) in 2008 (Table A3).

At the end of 2011, 137 young chicken establishments eligible for federal testing were in Category 1, comprising 86.7% of all young chicken establishments (Table A5) which was up from 85% in 2010. Furthermore in 2011, seven young chicken establishments (4.43%) were in Category 2T. Fourteen young chicken establishments were in Category 2 (8.96%). No young chicken establishments were in Category 3, making up 0% of all young chicken establishments. In 2010, 85% of young chicken establishments eligible for *Salmonella* sampling were in Category 1.

Additional information in this report concerns ***Salmonella Enteritidis*** (SE) test results for Young Chicken. FSIS tested 37,476 young chicken carcasses for the presence of *Salmonella* species during calendar years 2006 through 2011. These data from this extensive test base were reviewed and analyzed to estimate the percent of SE among the samples taken. Several factors were addressed – three of the factors (*Calendar Year, Month* and *Season*) pertain to when FSIS obtained the sample. The additional factors are the source establishment's *Production Volume*, geographical location (*Zone*) and FSIS's field operating units (*Districts*). FSIS examined each of these factors for observable changes in the SE percent positive in the following analysis.

SE Percent Positive by Calendar Year (Figure C1):

The SE percent positive ranged from a low of 0.88% in 2007 to a high of 1.78% during calendar year 2011. Initially, FSIS experienced a decrease in the SE percent positive in 2007 as compared to 2006 and then the percent positive either increased or remained steady through 2011. Of the 37,476 samples, FSIS found 495 positives (1.32%).

SE Percent Positive by Season (Figure C2):

Generally, the SE percent positive is higher during the winter months and the rate is increasing from 2007 through 2011. The lowest SE percent positive for the timeframe (2006-2011) and the factor *Season* is 0.94% which is observed in summer season. The highest SE percent positive is 1.70% which happens in winter season.

SE Percent Positive by Month (Figure C3):

When observed by month over the five calendar years reviewed, the data reveal a pattern of higher SE percent positives for November through February and lower rates for March through October. The lowest SE percent positive (0.81%) is observed in April and the highest rate (2.01%) occurs in January.

SE Percent Positive by Production Volume (Figure C4):

Increasing SE percent positives for establishments have been shown to occur with small and very small production volumes, whereas, medium and large volume establishments show decreasing SE percent positives for the 2008-2011 period. The lowest SE percent positive for the *Production Volume* category is 0.97% rate for establishments in the medium volume category. The highest SE percent positive is 2.12% for the large volume category.

SE Percent Positive by Zone (Figure C5):

The lowest SE percent positive for the zone factor is 1.06% for establishments in the Southwest zone. The highest SE percent positive is 2.05% for establishments in the Northcentral zone.

SE Percent Positive by FSIS District Office (Figure C6):

The lowest SE percent positive for the district partition is 0.00% for establishments in the Madison, Wisconsin district (note: no samples were taken for the Madison district for the years 2009, 2010 and for the Lawrence district in 2011). The highest SE percent positive rate for the district partition is 2.47% for establishments in the Chicago Illinois district.

Market Hog

In 2011, 2,299 samples were analyzed. The total percent of *Salmonella* positive sample tests was 3.3% and was up from 2.4% in 2010 (Table A1). Of the 50 sets completed in 2011, 100% met the *Salmonella* performance standard for this product class.

Cows/Bulls

In 2011, 832 samples were analyzed at eligible establishments with 0.8% of the samples positive for *Salmonella*. This compared to 1,764 samples analyzed in 2010 (0.5% positive), 2,036 samples analyzed in 2009 (0.6% positive), and 2,301 samples analyzed in 2008, (0.5% positive). Fifteen sets were completed in 2011 with 100% meeting the *Salmonella* performance standard for this product class.

Steers/Heifers

During 2011, 2,791 samples were analyzed with 0.5% positive for *Salmonella*. In 2010, 4,918 samples were analyzed (0.1% positive), in 2009, 4,939 samples were analyzed (0.1% positive), and in 2008, 4,965 samples were analyzed (0.2% positive). In 2011, 51 sets were completed, with 96.1% of these meeting the performance standard. This compares to 2010 when 62 sets were completed and 95.2% met the performance standard, and to 2009, when 68 *Salmonella* sets were completed and 97.1%

met the performance standard.

Ground Beef

In 2011, 13,161 ground beef samples were analyzed and 2.4% tested positive for *Salmonella*. This compares to 2010, when 9,256 samples were analyzed (2.2% positive), and to 2009 when 8,541 samples were analyzed (1.9% positive). Two hundred five sets were completed with 94.1% meeting the performance standard, compared to 2010 when 175 sets were completed (96.6% met the performance standard), and 2009 when 195 sets were completed (95.9% met the performance standard).

83% (247 establishments) were in Category 1, 5.7% percent (17 establishments) were in Category 2T, 9% (27 establishments) in Category 2, and 2.3% (3 establishments) in Category 3. In 2010, 79% of ground beef establishments eligible for *Salmonella* testing were in Category 1.

Ground Chicken

In 2011, 466 samples were analyzed, with a total of 30.9% percent positive. The total percent of sample sets meeting the performance standard was 77.8% with two sets completed.

75% (3 establishments) of ground chicken establishments were in Category 1 at the end of 2011, with no establishments in either Category 2 or Category 2T, and 25% (1 establishment) in Category 3. In 2010, 100% of ground chicken establishments eligible for *Salmonella* sampling were in Category 1.

Ground Turkey

In 2011, 511 samples were analyzed with a total percent positive at 12.3%, compared to 10.2% in 2010 (873 samples) and 10.7% in 2009 (608 samples). Fourteen sets were completed and all 14 passed for 2011, similar to 2010, when all 9 sets completed passed and to 2009 when all 14 sets completed passed.

100% (16 establishments) of ground turkey establishments were in Category 1, with no establishments in Category 2, Category 2T, or Category 3. In 2010, 95% of ground turkey establishments eligible for *Salmonella* sampling were in Category 1.

NOTE: The sampling frames for ground chicken and turkey are being re-examined. FSIS is considering redefining ground poultry product eligible for testing as all raw comminuted chicken, turkey, or chicken/turkey/beef/lamb/pork mix including mechanically separated poultry produced at federally-regulated establishments that is not further processed into RTE product.

Turkeys

In 2011, 1,541 turkey samples were analyzed, with a total percent positive at 2.4%, down from 4.6% positive in 2010. Of the 25 sets completed in 2011, 96% of these establishments met the *Salmonella* performance standard.

82% (27 establishments) were in Category 1, with 12% (4 establishments) in Category 2T, 3% (1 establishment) in Category 2, and 3% (1 establishment) in Category 3. In 2010, 82% of turkey establishments eligible for *Salmonella* testing were in Category 1.

The Agency annually reviews the progress made since 2006, and issues a report at the end of each calendar year. This report reflects data collected during 2011.

Table A1
Percent Positive *Salmonella* Tests in the PR/HACCP Verification Testing Program
By Product Class and Calendar Year, 1998 – 2011

All Samples

CY 2011											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0 / 7.5	3,255	3.0%	1,189	10.0%	300	30.3%	0		4,744	6.5%
Market Hogs	8.7	287	0.3%	904	4.1%	1,108	3.5%	0		2,299	3.3%
Cows/Bulls	2.7	47	0.0%	487	0.6%	298	1.3%	0		832	0.8%
Steers/Heifers	1.0	844	0.0%	1,015	0.8%	932	0.5%	0		2,791	0.5%
Ground Beef	7.5	1,294	4.7%	8,988	2.2%	2,826	1.9%	53	0.0%	13,161	2.4%
Ground Chicken	44.6	17	41.2%	400	24.8%	49	77.6%	0		466	30.9%
Ground Turkey	49.9	397	14.4%	84	4.8%	30	6.7%	0		511	12.3%
Turkeys	19.6 / 1.7	1,008	1.6%	489	3.3%	44	11.4%	0		1,541	2.4%

NOTE: The calendar year total for samples analyzed is not always the simple addition of the totals from all 4 quarters. On occasion, appealed sample results are removed from the totals for verification results. Baseline prevalence refers to studies conducted prior to 2008 and used for establishing original performance standards.

NOTE: New performance standards for young chicken and turkey carcasses were implemented July 1, 2011.

CY 2010											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	4,753	4.3%	1,956	11.5%	120	25.8%	0		6,829	6.7%
Market Hogs	8.7	1,290	1.7%	1,506	2.6%	1,428	2.8%	0		4,224	2.4%
Cows/Bulls	2.7	243	0.4%	1,366	0.4%	155	1.3%	0		1,764	0.5%
Steers/Heifers	1.0	1,623	0.0%	1,721	0.2%	1,574	0.2%	0		4,918	0.1%
Ground Beef	7.5	1,048	2.2%	6,786	2.1%	1,422	2.5%	0		9,256	2.2%
Ground Chicken	44.6	89	22.5%	312	16.3%	25	36.0%	0		426	18.8%
Ground Turkey	49.9	658	11.6%	154	7.8%	61	1.6%	0		873	10.2%
Turkeys	19.6	1,049	4.9%	395	3.8%	0		0		1,444	4.6%

CY 2009											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	4,605	5.0%	1,653	11.7%	181	21.0%	0		6,439	7.2%
Market Hogs	8.7	972	1.0%	1,780	2.5%	1,995	2.7%	0		4,747	2.3%
Cows/Bulls	2.7	406	0.2%	1,238	0.6%	392	0.8%	0		2,036	0.6%
Steers/Heifers	1.0	1,683	0.1%	1,484	0.4%	1,772	0.2%	0		4,939	0.2%
Ground Beef	7.5	902	3.0%	6,004	2.1%	1,635	0.7%	0		8,541	1.9%
Ground Chicken	44.6	46	30.4%	276	11.6%	52	42.3%	0		374	18.2%
Ground Turkey	49.9	423	11.8%	128	9.4%	57	5.3%	0		608	10.7%
Turkeys	19.6	931	3.5%	501	4.2%	0		0		1,432	3.8%

CY 2008											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	4,694	5.9%	1,644	10.0%	125	21.6%	51	7.8%	6,514	7.3%
Market Hogs	8.7	538	1.5%	1,686	3.8%	2,020	1.8%	0		4,244	2.6%
Cows/Bulls	2.7	33	0.0%	1,628	0.4%	640	0.9%	0		2,301	0.5%
Steers/Heifers	1.0	1,151	0.0%	1,504	0.1%	2,228	0.3%	82	0.0%	4,965	0.2%
Ground Beef	7.5	1,261	4.0%	10,673	2.2%	4,720	2.6%	109	0.0%	16,763	2.4%
Ground Chicken	44.6	145	32.4%	213	19.2%	53	32.1%	0		411	25.5%
Ground Turkey	49.9	764	16.9%	84	7.1%	28	0.0%	0		876	15.4%
Turkeys	19.6	77	3.9%	52	9.6%	0		0		129	6.2%

CY 2007											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	6,306	7.6%	2,657	9.6%	445	15.3%	0		9,408	8.5%
Market Hogs	8.7	1,614	1.2%	2,435	3.9%	3,259	2.8%	0		7,308	2.8%
Cows/Bulls	2.7	460	0.0%	2,214	1.4%	1,295	0.8%	0		3,969	1.1%
Steers/Heifers	1.0	1,755	0.0%	1,395	0.2%	1,205	0.5%	0		4,355	0.2%
Ground Beef	7.5	883	4.8%	7,659	3.1%	5,153	1.6%	0		13,695	2.7%
Ground Chicken	44.6	67	61.2%	373	19.6%	66	28.8%	0		506	26.3%
Ground Turkey	49.9	631	18.4%	153	17.0%	36	2.8%	0		820	17.4%
Turkeys	19.6	1,334	7.2%	410	2.9%	0		0		1,744	6.2%

CY 2006											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	6,856	10.4%	2,962	12.7%	388	19.8%	0		10,206	11.4%
Market Hogs	8.7	895	1.3%	2,091	4.9%	4,256	4.2%	0		7,242	4.0%
Cows/Bulls	2.7	235	0.0%	1,338	0.9%	673	1.0%	0		2,246	0.8%
Steers/Heifers	1.0	1,142	0.1%	1,277	0.6%	1,255	0.1%	0		3,674	0.3%
Ground Beef	7.5	605	3.3%	9,584	2.3%	7,660	1.4%	0		17,849	2.0%
Ground Chicken	44.6	89	60.7%	101	41.6%	32	12.5%	0		222	45.0%
Ground Turkey	49.9	296	19.9%	145	21.4%	3	0.0%	0		444	20.3%
Turkeys	19.6	2,024	7.7%	761	5.5%	0		0		2,785	7.1%

“A” Set Samples

CY 2005											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	6,853	14.7%	2,458	18.6%	280	32.9%	1	0.0%	9,592	16.3%
Market Hogs	8.7	1,410	2.2%	1,750	5.2%	3,488	3.6%	0		6,648	3.7%
Cows/Bulls	2.7	229	0.0%	975	1.5%	745	1.5%	0		1,949	1.3%
Steers/Heifers	1.0	788	0.0%	552	0.9%	750	0.9%	0		2,090	0.6%
Ground Beef	7.5	544	2.2%	9,070	1.4%	9,751	0.8%	0		19,365	1.1%
Ground Chicken	44.6	0		133	33.1%	12	25.0%	0		145	32.4%
Ground Turkey	49.9	799	24.8%	86	14.0%	40	12.5%	0		925	23.2%

CY 2004											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	5,023	11.7%	1,871	18.2%	178	17.4%	0		7,072	13.5%
Market Hogs	8.7	1,274	2.2%	1,989	4.8%	4,597	2.7%	0		7,860	3.1%
Cows/Bulls	2.7	522	0.0%	1,801	0.6%	852	1.5%	0		3,175	0.8%
Steers/Heifers	1.0	1,471	0.0%	1,287	0.3%	1,469	0.5%	0		4,227	0.3%
Ground Beef	7.5	840	2.4%	15,336	2.0%	14,808	1.2%	0		30,984	1.6%
Ground Chicken	44.6	53	5.7%	254	29.1%	81	27.2%	0		388	25.5%
Ground Turkey	49.9	835	20.7%	177	19.2%	32	3.1%	0		1,044	19.9%

CY 1998-2003											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	20.0	34,206	9.9%	12,102	13.7%	782	24.3%	0		47,090	11.2%
Market Hogs	8.7	8,763	3.2%	7,382	6.8%	13,723	3.7%	108	0.9%	29,976	4.3%
Cows/Bulls	2.7	1,276	0.4%	8,038	1.7%	3,570	2.9%	0		12,884	1.9%
Steers/Heifers	1.0	3,648	0.2%	3,995	0.6%	5,175	0.4%	17	0.0%	12,835	0.4%
Ground Beef	7.5	5,800	4.4%	79,251	3.3%	49,624	1.9%	113	7.1%	134,788	2.8%
Ground Chicken	44.6	567	16.2%	1,065	26.3%	90	16.7%	0		1,722	22.5%
Ground Turkey	49.9	4,367	28.0%	1,225	22.4%	199	17.1%	0		5,791	26.4%

NOTE: CY1998 through CY2003 are reported aggregately instead of individually because reliable annual data is not available.

Table A2
Percent Positive *Salmonella* Tests in the PR/HACCP Verification Testing Program
Aggregated Results by Product Class, 1998 – 2011

All Years 1998 - 2011										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	76,551	9.1%	28,492	13.3%	2,799	23.0%	52	7.7%	107,894	10.6%
Market Hogs	17,043	2.4%	21,523	5.0%	35,874	3.3%	108	0.9%	74,548	3.6%
Cows/Bulls	3,451	0.2%	19,085	1.2%	8,620	1.9%	0		31,156	1.3%
Steers/Heifers	14,105	0.1%	14,230	0.4%	16,360	0.4%	99	0.0%	44,794	0.3%
Ground Beef	13,177	3.9%	153,351	2.8%	97,599	1.6%	275	2.9%	264,402	2.4%
Ground Chicken	1,073	25.9%	3,127	23.5%	460	32.4%	0		4,660	25.0%
Ground Turkey	9,170	22.7%	2,236	18.4%	486	9.7%	0		11,892	21.3%
Turkeys	6,423	5.5%	2,608	4.3%	44	11.4%	0		9,075	5.2%

NOTE: HACCP classifications for a plant can change over time. This table reflects the sum of the individual tables, i.e. HACCP size at the time the samples were taken.

Table A3

**Percent of Sample Sets Meeting the *Salmonella* Performance Standards
By Product Class and Calendar Year, 1998 – 2011***

All Sets

CY 2011										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	71	100.00%	25	92.00%	4	50.00%	0	0	100	96.00%
Market Hogs	5	100.00%	21	100.00%	24	100.00%	0	0	50	100.00%
Cows/Bulls	1	100.00%	8	100.00%	6	100.00%	0	0	15	100.00%
Steers/Heifers	16	100.00%	16	93.80%	19	94.70%	0	0	51	96.10%
Ground Beef	22	81.80%	138	95.70%	44	95.50%	1	100.00%	205	94.10%
Ground Chicken	1	100.00%	7	85.70%	1	0.00%	0	0	9	77.80%
Ground Turkey	11	100.00%	1	100.00%	2	100.00%	0	0	14	100.00%
Turkeys	19	94.70%	6	100.00%	0	0	0	0	25	96.00%

* Includes sample sets completed during the indicated calendar year (sample sets may have started during an earlier year).

CY 2010										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	94	98.9%	38	86.8%	2	50.0%	0		134	94.8%
Market Hogs	24	95.8%	30	96.7%	32	96.9%	0		86	96.5%
Cows/Bulls	4	100.0%	25	96.0%	3	66.7%	0		32	93.8%
Steers/Heifers	18	100.0%	23	91.3%	21	95.2%	0		62	95.2%
Ground Beef	23	100.0%	124	96.0%	28	96.4%	0		175	96.6%
Ground Chicken	2	100.0%	8	100.0%	1	100.0%	0		11	100.0%
Ground Turkey	9	100.0%	4	100.0%	1	100.0%	0		14	100.0%
Turkeys	22	95.5%	8	87.5%	0		0		30	93.3%

CY 2009										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	102	99.0%	35	88.6%	3	66.7%	0		140	95.7%
Market Hogs	21	100.0%	33	97.0%	40	95.0%	0		94	96.8%
Cows/Bulls	7	100.0%	26	96.2%	9	88.9%	0		42	95.2%
Steers/Heifers	23	100.0%	17	88.2%	28	100.0%	0		68	97.1%
Ground Beef	20	95.0%	130	96.2%	45	95.6%	0		195	95.9%
Ground Chicken	2	50.0%	3	100.0%	1	100.0%	0		6	83.3%
Ground Turkey	9	100.0%	4	100.0%	1	100.0%	0		14	100.0%
Turkeys	15	100.0%	9	100.0%	0		0		24	100.0%

CY 2008										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	105	99.0%	37	94.6%	6	83.3%	1	100.0%	149	97.3%
Market Hogs	12	66.7%	35	97.1%	43	97.7%	0		90	93.3%
Cows/Bulls	2	100.0%	32	96.9%	12	100.0%	2	100.0%	48	97.9%
Steers/Heifers	15	100.0%	24	91.7%	25	88.0%	0		64	92.2%
Ground Beef	26	92.3%	225	90.7%	109	78.9%	3	100.0%	363	87.3%
Ground Chicken	3	66.7%	5	100.0%	1	100.0%	0		9	88.9%
Ground Turkey	16	100.0%	1	100.0%	1	100.0%	0		18	100.0%
Turkeys	3	100.0%	2	100.0%	0		0		5	100.0%

CY 2007										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	147	98.0%	63	96.8%	5	80.0%	0		215	97.2%
Market Hogs	29	100.0%	46	97.8%	72	95.8%	0		147	97.3%
Cows/Bulls	7	100.0%	34	94.1%	22	95.5%	0		63	95.2%
Steers/Heifers	24	100.0%	16	87.5%	17	94.1%	0		57	94.7%
Ground Beef	16	93.8%	144	95.1%	93	97.8%	0		253	96.0%
Ground Chicken	1	0.0%	7	100.0%	2	100.0%	0		10	90.0%
Ground Turkey	11	100.0%	4	100.0%	0		0		15	100.0%
Turkeys	35	100.0%	10	100.0%	0		0		45	100.0%

CY 2006										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	126	92.9%	52	82.7%	6	50.0%	0		184	88.6%
Market Hogs	26	100.0%	45	93.3%	74	93.2%	0		145	94.5%
Cows/Bulls	5	100.0%	20	95.0%	9	77.8%	0		34	91.2%
Steers/Heifers	11	100.0%	11	81.8%	11	100.0%	0		33	93.9%
Ground Beef	12	91.7%	186	96.8%	173	98.8%	0		371	97.6%
Ground Chicken	1	0.0%	1	100.0%	0		0		2	50.0%
Ground Turkey	9	100.0%	2	100.0%	1	100.0%	0		12	100.0%
Turkeys	23	95.7%	10	90.0%	0		0		33	93.9%

“A” Sets

CY 2005										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	121	86.0%	45	73.3%	5	40.0%	0		171	81.3%
Market Hogs	16	100.0%	24	83.3%	73	97.3%	0		113	94.7%
Cows/Bulls	3	100.0%	18	88.9%	17	100.0%	0		38	94.7%
Steers/Heifers	7	100.0%	8	87.5%	9	88.9%	0		24	91.7%
Ground Beef	11	100.0%	181	98.3%	199	98.5%	0		391	98.5%
Ground Chicken	0		5	80.0%	0		0		5	80.0%
Ground Turkey	12	100.0%	1	100.0%	0		0		13	100.0%

CY 2004										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	106	94.3%	36	77.8%	2	100.0%	0		144	90.3%
Market Hogs	25	96.0%	35	85.7%	70	92.9%	0		130	91.5%
Cows/Bulls	9	100.0%	36	97.2%	16	81.3%	0		61	93.4%
Steers/Heifers	24	100.0%	19	94.7%	29	96.6%	0		72	97.2%
Ground Beef	16	93.8%	287	97.6%	268	97.0%	0		571	97.2%
Ground Chicken	1	100.0%	3	100.0%	1	100.0%	0		5	100.0%
Ground Turkey	18	94.4%	3	100.0%	0		0		21	95.2%

CY 1998-2003										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	660	92.1%	229	84.7%	12	50.0%	0		901	89.7%
Market Hogs	156	94.9%	126	83.3%	202	91.1%	1	100.0%	485	90.3%
Cows/Bulls	22	95.5%	128	85.9%	49	77.6%	0		199	84.9%
Steers/Heifers	37	100.0%	40	95.0%	36	88.9%	0		113	94.7%
Ground Beef	105	88.6%	1,411	92.6%	813	97.3%	3	66.7%	2,332	94.0%
Ground Chicken	9	100.0%	18	88.9%	1	100.0%	0		28	92.9%
Ground Turkey	74	94.6%	20	90.0%	3	100.0%	0		97	93.8%

NOTE: CY1998 through CY2003 are reported aggregately instead of individually because reliable annual data is not available.

Table A4

**Percent of Sample Sets Meeting the *Salmonella* Performance Standards
Aggregated by Product Class and Calendar Year, 1998 – 2011**

All Years 1998 - 2010										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	1,532	94.1%	560	85.9%	45	60.0%	1	100.0%	2,138	91.3%
Market Hogs	314	95.5%	395	90.6%	630	94.1%	1	100.0%	1,340	93.4%
Cows/Bulls	60	98.3%	327	91.7%	143	86.7%	2	100.0%	532	91.2%
Steers/Heifers	175	100.0%	174	91.4%	195	93.8%	0		544	95.0%
Ground Beef	251	91.2%	2,826	94.2%	1,772	96.3%	7	85.7%	4,856	94.8%
Ground Chicken	20	80.0%	57	93.0%	8	87.5%	0		85	89.4%
Ground Turkey	169	97.0%	40	95.0%	9	100.0%	0		218	96.8%
Turkeys	117	97.4%	45	95.6%	0		0		162	96.9%

NOTE: HACCP classifications for a plant can change over time. This table reflects the sum of the individual tables, i.e. HACCP size at the time the samples were taken.

Table A5
Number of Establishments and Percentage in Each Category by Product, 2011

Category	Young Chicken		Ground Beef		Ground Chicken		Ground Turkey		Turkeys		All Products	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	137	86.70%	247	82.88%	3	75.00%	16	100.00%	27	81.81%	430	84.47%
2T	7	4.43%	17	5.70%	0	0	0	0	4	12.12%	28	5.50%
2	14	8.86%	27	9.06%	0	0	0	0	1	3.03%	42	8.25%
3	0	0	7	2.34%	1	25.00%	0	0	1	3.03%	9	1.76%
Total	158	100.00%	298	100.00%	4	100.00%	16	100.00%	33	100.00%	509	100.00%

NOTE: Only plants eligible for sampling (currently operating) and having at least 2 completed sets are included.

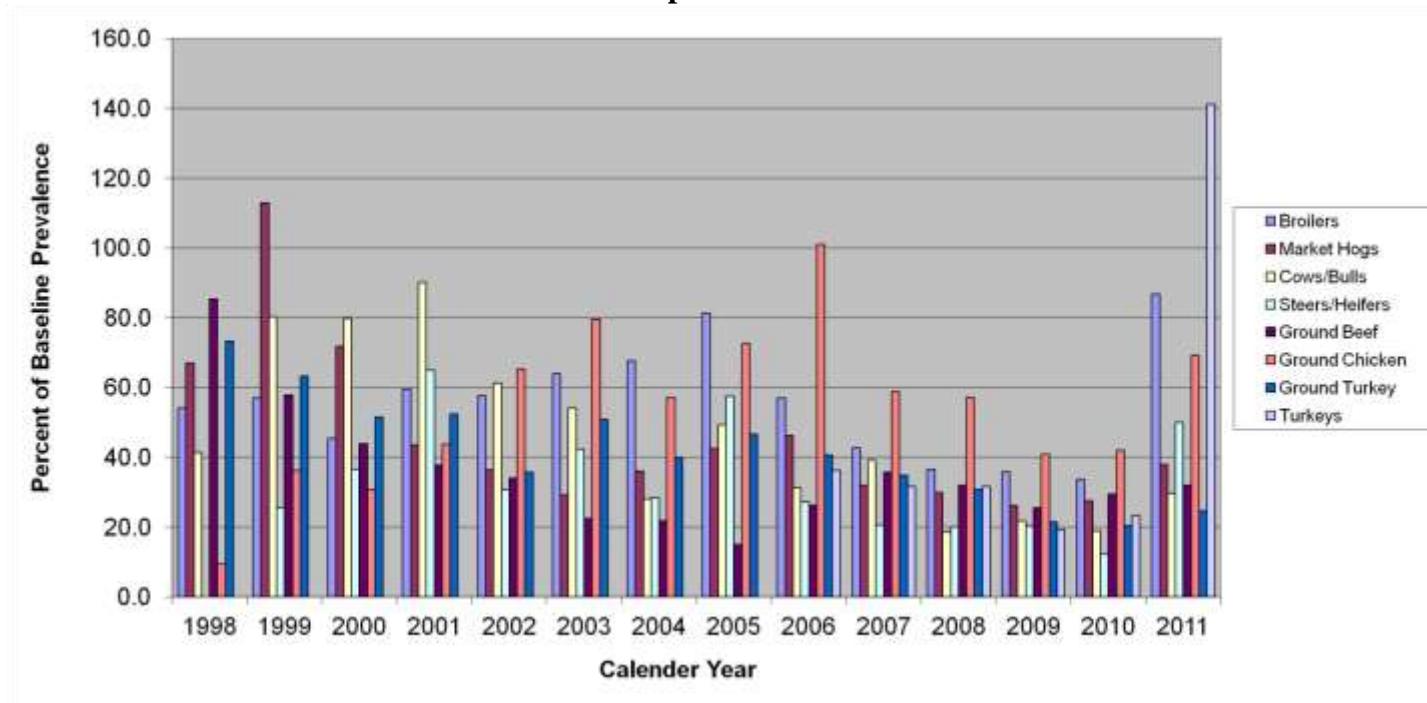
Table A6
Percent Positive *Campylobacter* Tests in the PR/HACCP Verification Testing Program
By Product Class and Calendar Year, 2011

All Samples

CY 2011											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	10.4	1,945	7.60%	448	16.30%	40	15.00%	0		2,433	9.30%
Turkeys	0.79	777	2.80%	309	7.80%	3	0.00%	0		1,089	4.20%

NOTE: The calendar year total for samples analyzed is not always the simple addition of the totals from all 4 quarters. On occasion, appealed sample results are removed from the totals for verification results. Baseline prevalence refers to studies conducted prior to 2008 and used for establishing original performance standards.

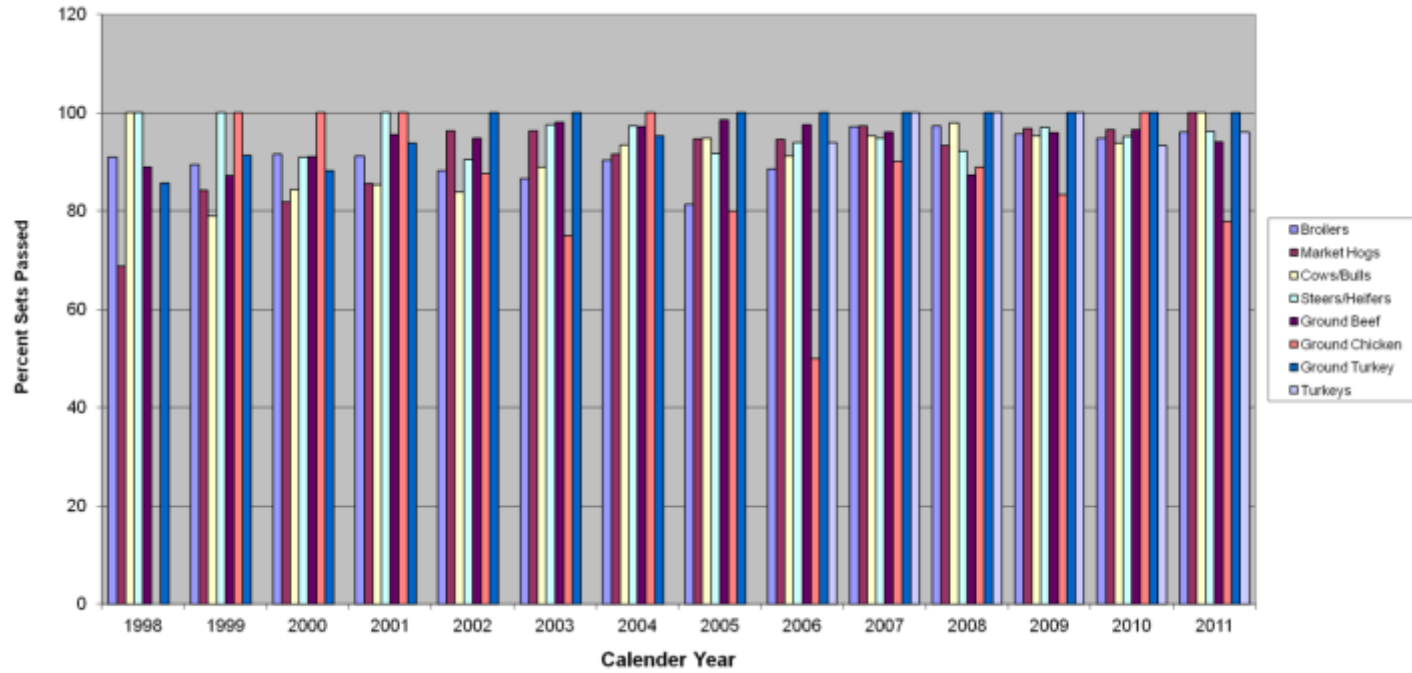
Figure B1
Comparison of Percent Positive *Salmonella* Tests in the PR/HACCP Verification Testing Program with Baseline Prevalence,
by Calendar Year and Product Class, 1998 – 2011 *
“A” Set Samples 1998 – 2005
All Samples 2006 – 2010



* Bars represent percent positive *Salmonella* tests divided by product class-specific baseline *Salmonella* prevalence.

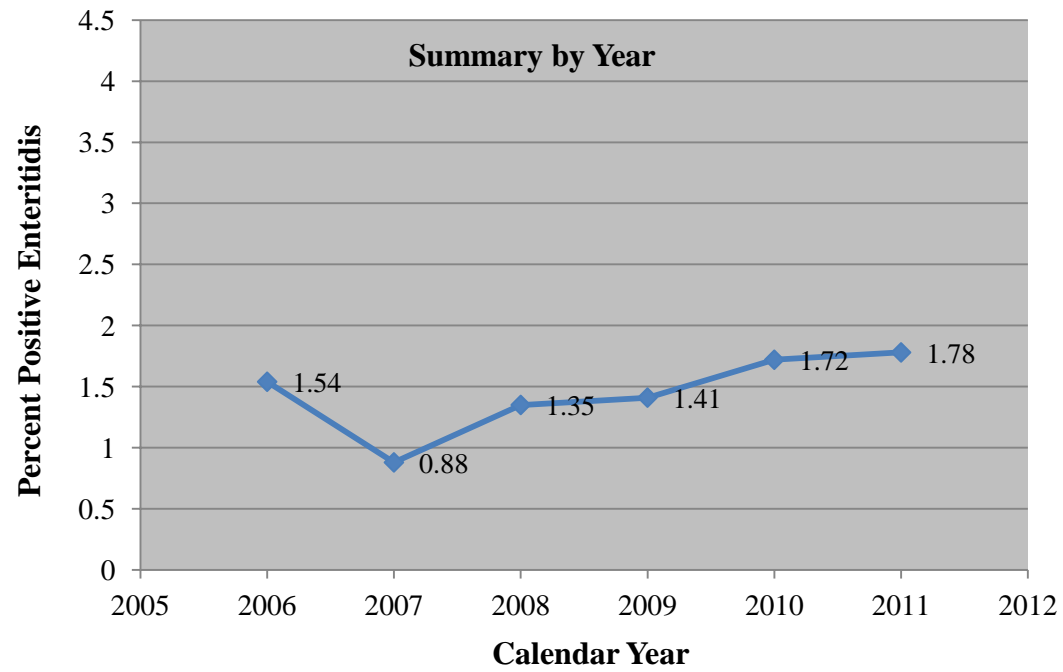
NOTE: 2011 uses new young chicken and turkey performance standards for entire year of data for purposes of this calculation.

Figure B2
Overall Percentages of Sample Sets Meeting *Salmonella* Performance Standards
By Calendar Year and Product Class, 1998 – 2011 *
“A” Sets 1998 – 2005
All Sets 2006 – 2011



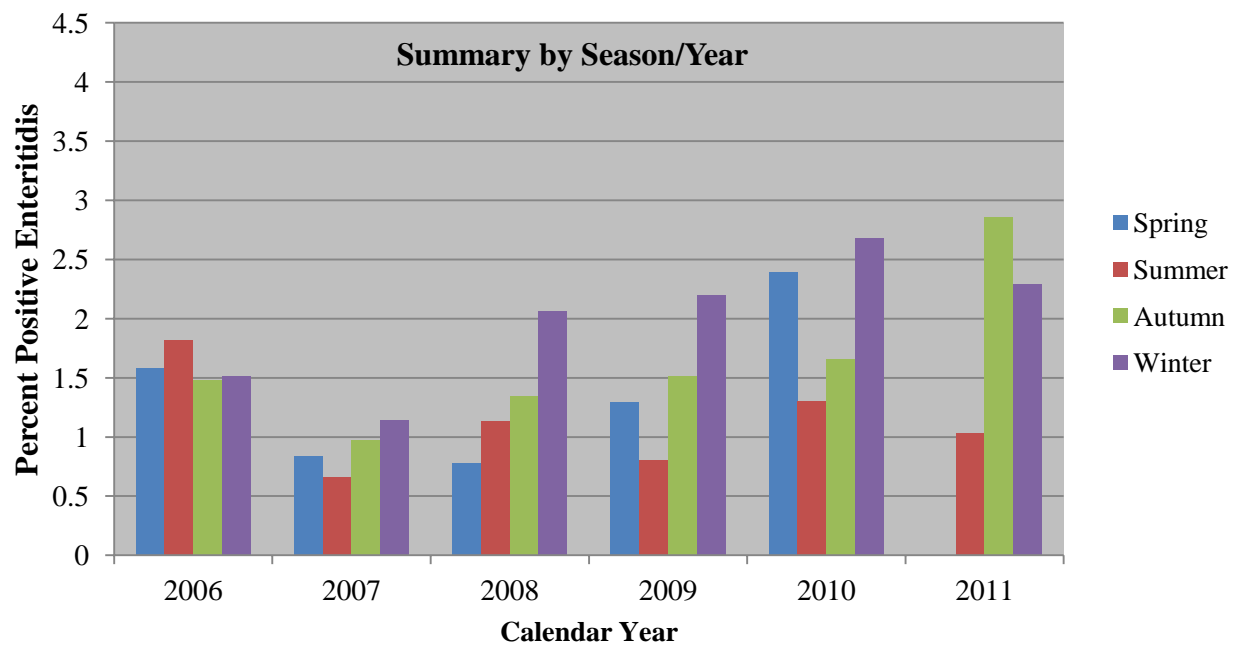
* Includes sample sets completed during the indicated calendar year (sample sets may have started during an earlier year).

Figure C1
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by Calendar Year



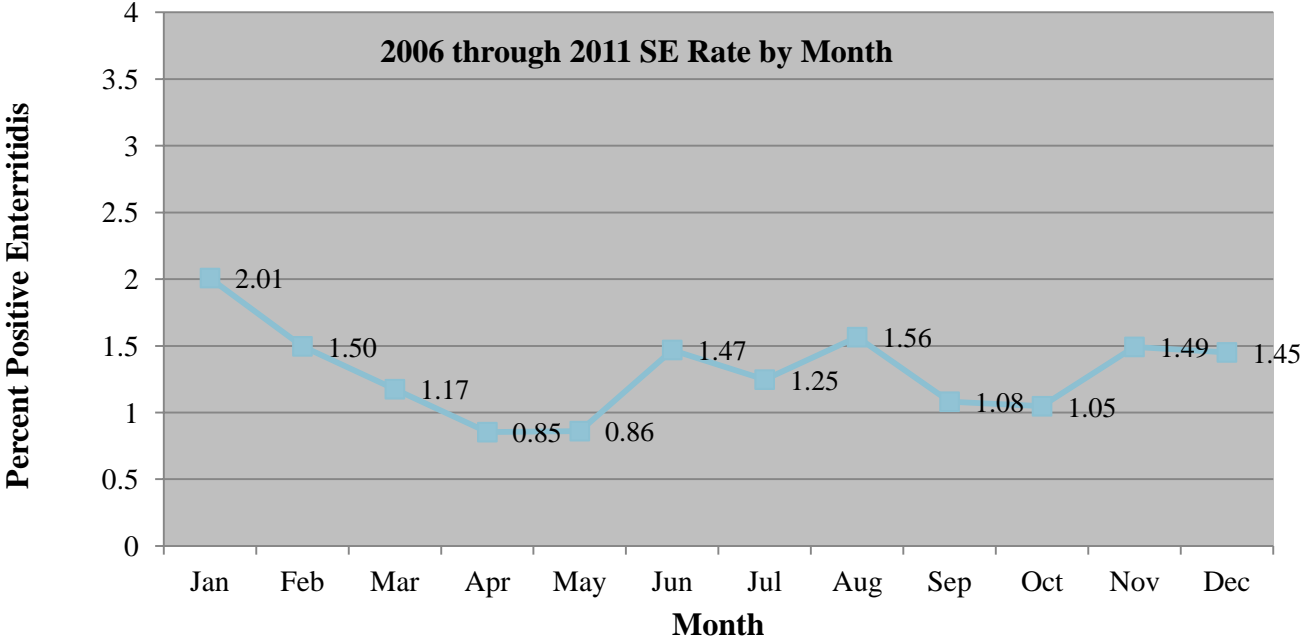
	Year						6 Year Summary	
	2006	2007	2008	2009	2010	2011		
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Total Samples	Positive Enteritidis (%)
	1.54	0.88	1.35	1.41	1.72	1.78	37476	1.32
# Establishments	155	180	146	133	146	74		

Figure C2
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by Season/Year



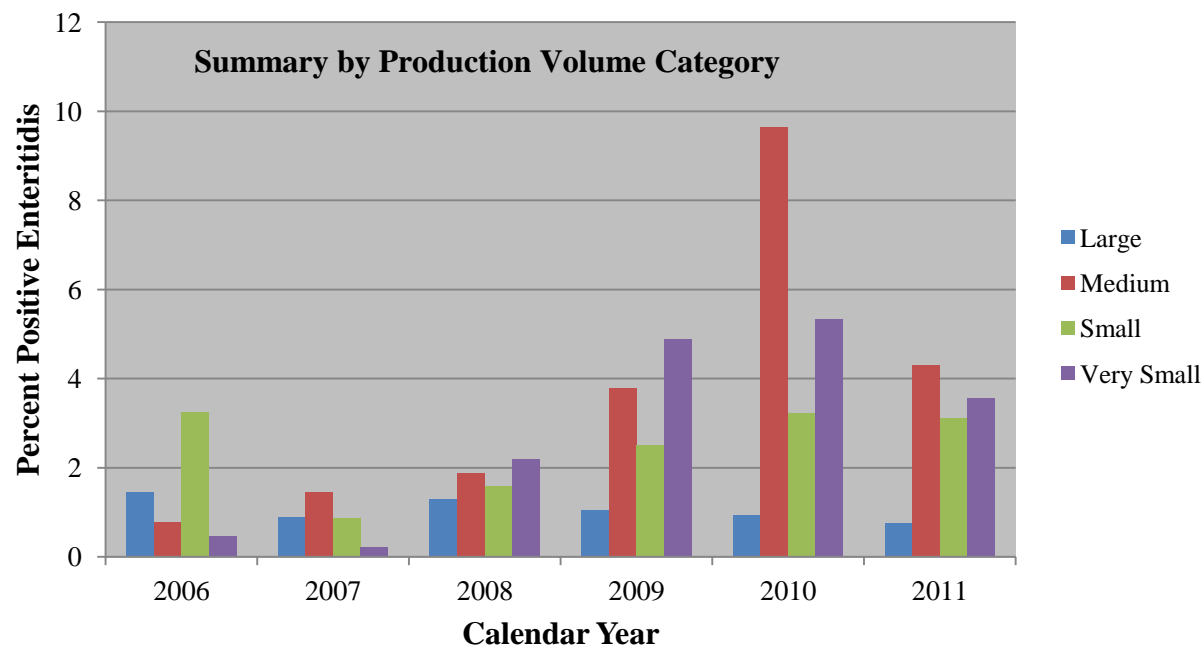
Season	Year						Summary by Season		# Establishments
	2006	2007	2008	2009	2010	2011	Total Samples	Positive Enteritidis (%)	
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)			
Spring	1.58	0.84	0.78	1.29	2.39	0	7,138	1.19	191
Summer	1.82	0.66	1.13	0.8	1.3	1.03	9,763	0.94	196
Autumn	1.48	0.97	1.34	1.51	1.66	2.86	11,553	1.43	173
Winter	1.51	1.14	2.06	2.2	2.68	2.29	9,022	1.70	187

Figure C3
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by Month



Month	Year						Summary by Month		# Establishments
	2006	2007	2008	2009	2010	2011	Total Samples	Positive Enteritidis (%)	
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)			
January	1.58	1.25	2.88	2.37	0	3.18	3,733	2.01	158
February	2.18	0.76	2.01	2.04	1.14	0.98	2,606	1.50	145
March	3.41	0.61	1.61	0.23	1.31	1.38	2,634	1.17	164
April	2.2	0.34	0.54	1.58	1.64	1.28	3,293	0.85	178
May	0.66	0.93	1.51	0.37	0.96	0	3,836	0.86	189
June	1.88	1.01	1	1.67	1.3	3.73	3,743	1.47	188
July	1.29	0.67	1.72	1.25	1.79	1.5	3,847	1.25	185
August	1.44	1.5	1.33	1.57	2.19	3.54	3,963	1.56	174
September	1.56	0	0.75	1.22	2.37	0	2,956	1.08	161
October	1.21	1.05	1.2	0.86	2.33	0	2,100	1.05	151
November	1.82	1.09	0	1.97	2.45	0	2,082	1.49	145

Figure C4
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by Establishment Production Volume



Very Small - less than or equal to 3 million pounds produced annually*,

Small - greater than 3 million pounds but less than 200 million pounds produced annually*,

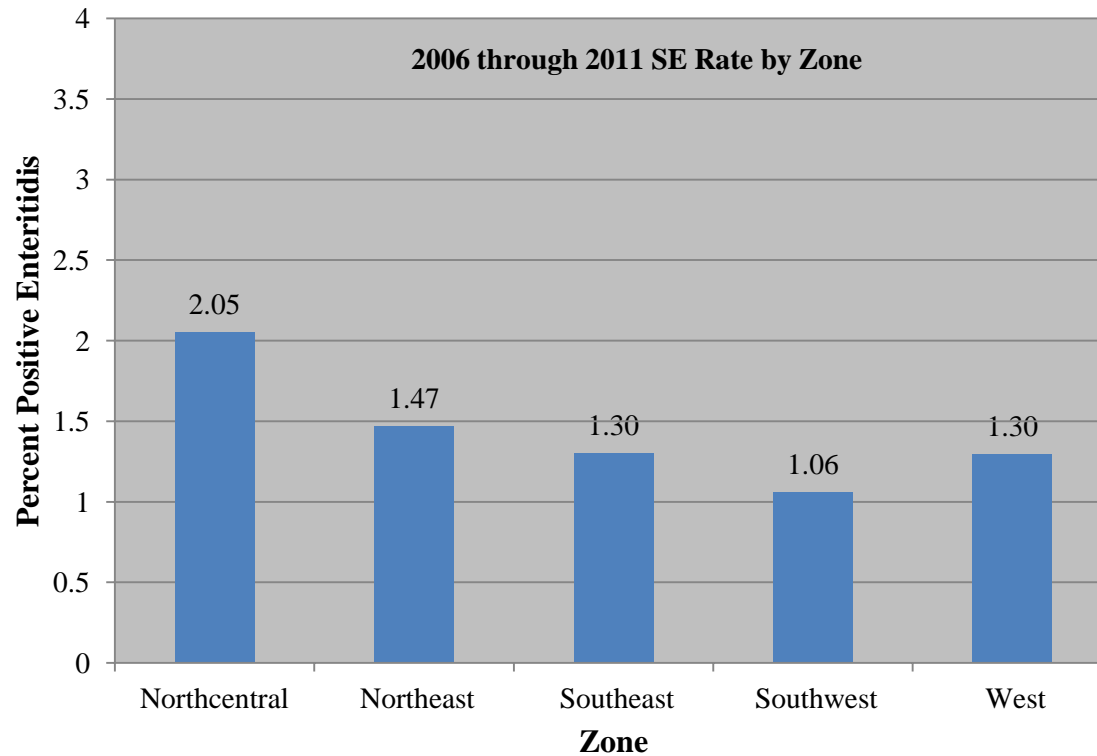
Medium - more than 200 million pounds but less than 375 million pounds produced annually*,

Large - more than 375 million pounds produced annually*

* Weight is based upon the live weight reported in the eADRS slaughter database multiplied by the constant 0.735 to estimate annual raw production weight (dressed weight).

Production Volume Category	Year						Summary by District		# Establishments
	2006	2007	2008	2009	2010	2011	Total Samples	Positive Enteritidis (%)	
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)			
Large	1.45	0.88	1.29	1.05	0.94	0.76	30551	1.15	18
Medium	0.78	1.45	1.87	3.79	9.64	4.31	2045	2.15	103
Small	3.24	0.87	1.57	2.49	3.22	3.12	3324	2.20	100
Very Small	0.46	0.22	2.19	4.88	5.34	3.55	1556	1.67	45

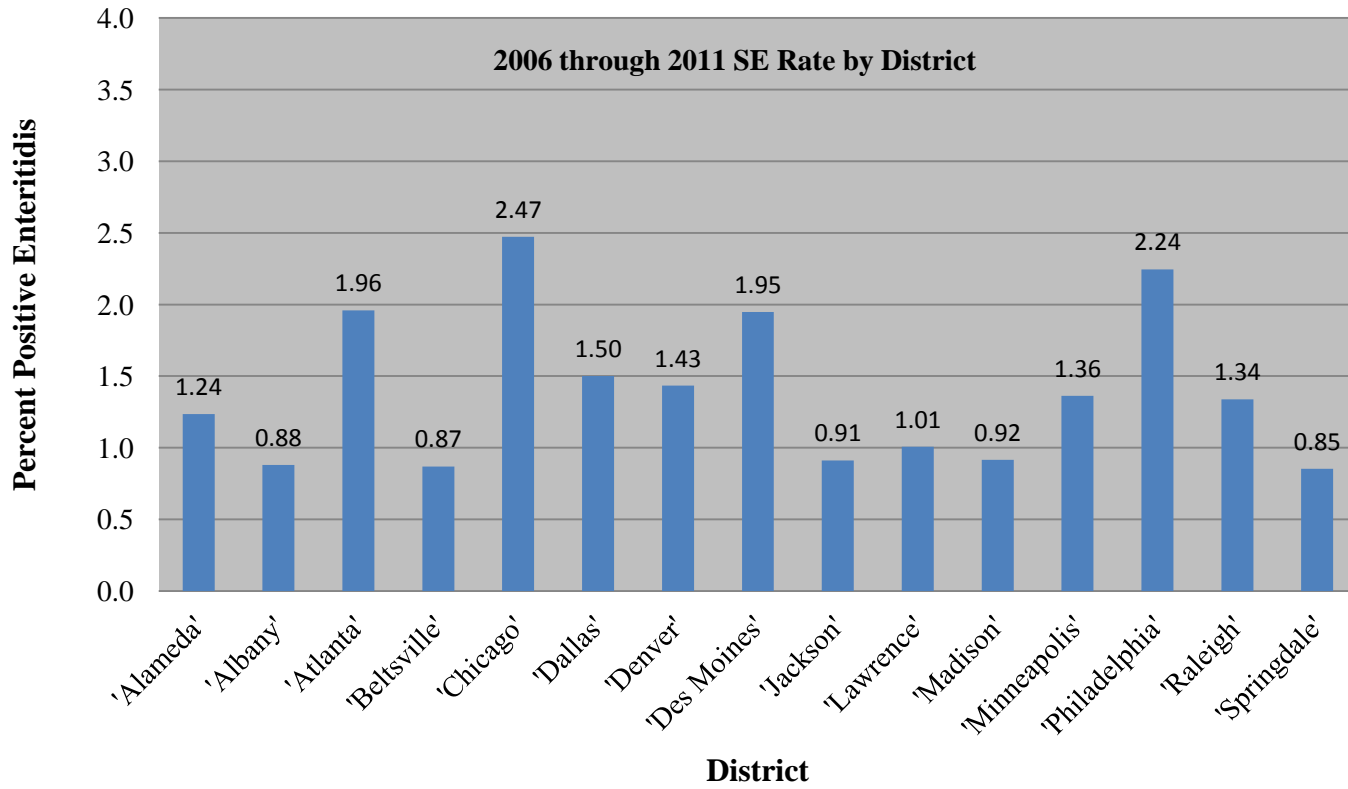
Figure C5
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by Geographic Zone



Northcentral: IL, IN, IA, MI, MN, OH, WI; **Northeast:** CT, ME, MA, NH, RI, VT, DE, MD, NJ, NY, PA, DC;
Southeast: AL, FL, GA, KY, MS, NC, SC, TN, VA, WV, PR, VI; **Southwest:** NM, TX, OK, AR, KS, LA, MO, and NE;
West: AZ, CO, ID, MT, NV, UT, WY, AK, CA, HI, OR, WA, ND, SD

Zone	Year						Summary By Zone		# Establishments
	2006	2007	2008	2009	2010	2011	Total Samples	Positive Enteritidis (%)	
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)			
Northcentral	0.85	0.55	1.76	4.62	5.08	3.88	2829	2.05	19
Northeast	2.33	0.83	1.38	0.43	3.24	2.06	4560	1.47	23
Southeast	1.53	1.11	1.21	1.35	1.33	1.26	19200	1.30	99
Southwest	1.12	0.6	1.5	1.09	1.2	1.14	8884	1.06	46
West	2.12	0.39	1.36	1.28	0	0	2003	1.30	13

Figure C6
Young Chicken *Salmonella* Enteritidis (SE)
Percent Positive by District



District	Year						Summary by District		# Establishments
	2006	2007	2008	2009	2010	2011	Total Samples	Positive Enteritidis (%)	
	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)	Positive Enteritidis (%)			
Alameda, CA (05)	3.07	0.32	0.43	0.56	0	0	1375	1.24	9
Albany, NY (65)	0	1.75	0.92	0	8.94	2.3	568	0.88	3
Atlanta, GA (85)	2.51	1.48	1.8	2.31	2.11	1.49	4898	1.96	24
Beltsville, MD (75)	1.6	0.35	0.42	1.21	0.84	0	3223	0.87	17
Chicago, IL (50)	0.67	1.27	2.59	6.02	6.41	2.96	1498	2.47	8
Dallas, TX (40)	1.88	1.08	1.82	1.59	0.97	0	2331	1.50	12
Denver, CO (15)	0.42	0.52	4.76	3.57	0	0	628	1.43	4
Des Moines, IA (25)	1.68	0	3.77	3.85	2.27	3.51	719	1.95	3
Jackson, MS (90)	0.72	0.94	1.05	0.83	1.09	1.71	7768	0.91	39
Lawrence, KS (30)	1.73	0.26	1.47	1.12	1.83	0*	1092	1.01	7
Madison, WI (45)	0	0	0	0*	0*	4.48	328	0.92	3
Minneapolis, MN (20)	1.18	0	0	0.78	2.26	5.83	588	1.36	6
Philadelphia, PA (60)	3.21	1.34	2.55	0.89	4.06	3.17	2137	2.24	11
Raleigh, NC (80)	2.14	1.07	1.15	0.97	1.08	0.6	5166	1.34	28
Springdale, AR (35)	0.67	0.54	1.32	0.86	0.99	1.45	5157	0.85	26

Note*: For shaded areas, years 2009, 2010 and 2011 there were no samples taken.