



United States
Department of
Agriculture

Food Safety
and Inspection
Service

Progress Report on *Salmonella* and *Campylobacter* Testing of Raw Meat and Poultry Products, 1998-2013¹

Executive Summary

In calendar year 2013, FSIS analyzed 31,374 verification samples across six meat and poultry product classes with the following percent positive rate of *Salmonella* per product class: young chicken (3.9%), steer/heifer (0.0%), ground beef (1.6%), ground chicken (18.0%), ground turkey (15.0%) and turkey (2.3%). 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 2013, 81.8% of establishments are in Category 1. Based on five product classes, the following percentages of establishments are in Category 1: young chicken (74.4%), ground beef (86.2%), ground chicken (71.4%), ground turkey (90.9%), and turkey (77.1%).

The Agency established a revised 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.

¹ All years listed are calendar years (CY)

2013 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. An establishment with its last set $\leq 50\%$ of the performance standard or guidance and the prior set is NOT $\leq 50\%$ of the performance standard is 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 of sample sets meeting the *Salmonella* performance standards listed by product class and PR/HACCP establishment size for 2013 and previous years (Table A1 and A3). Data is presented in aggregate form for the periods 1998-2013 (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 2012 are counted in the 2012 results (Table A1). However if the sample set was completed in 2013, the set was counted in 2013 (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.

Figure B1 compares *Salmonella* percent positive results from 2006 to 2013 with baseline prevalence by product class and year. Percentages of sample sets meeting *Salmonella* performance standards by product class from 2006 to 2013 are presented in Figure B2.

² Restructuring how *Salmonella* sets are scheduled means that it would be inappropriate to compare results prior to 2006 to results after 2006.

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.

Young Chicken

FSIS continues to direct resources toward testing young chicken establishments. In 2013 (Table A1), 11,124 *Salmonella* samples were analyzed from young chicken establishments. The total percentage of positive samples was 3.9% in 2013, down from 4.3%, 6.5%, 6.7%, and 7.2% in 2012, 2011, 2010, and 2009, respectively. In addition, of the 219 sets completed in 2013 at young chicken establishments, 93.2% met the *Salmonella* performance standard compared to 89.3% (178 sets completed) in 2012, 96% (100 sets completed) in 2011, and 94.8% (134 sets completed) in 2010 (Table A3).

At the end of 2013, 131 young chicken establishments eligible for federal testing were in Category 1, comprising 74.4% of all young chicken establishments (Table A5) which was up from 73.1% in 2012. Furthermore in 2013, twenty-five young chicken establishments (14.2%) were in Category 2T. Twelve young chicken establishments were in Category 2 (6.8%). Eight young chicken establishments were in Category 3, making up 4.5% of all young chicken establishments.

Summary information for ***Salmonella Enteritidis*** (SE) test results for Young Chicken (Figure C1) show a 0.52% positive rate among the samples taken in 2013, which is down from 0.84% in 2012.

Turkeys

In 2013, 2,412 turkey samples were analyzed, with a total percent positive at 2.3%, up from 2.2% positive in 2012. Of the 38 sets completed in 2013, 89.5% of these establishments met the *Salmonella* performance standard.

77.1% (27 establishments) were in Category 1, with 8.6% (3 establishments) in Category 2T, 8.6% (3 establishment) in Category 2, and 5.7% (2 establishments) in Category 3. In 2012, 82.4% of turkey establishments eligible for *Salmonella* testing were in Category 1.

Ground Beef

In 2013, 17,161 ground beef samples were analyzed and 1.6% tested positive for *Salmonella*. This compares to 2012, when 14,665 samples were analyzed (1.9% positive), to 2011 when 13,161 samples were analyzed (2.4% positive), and to 2010 when 9,256 samples were analyzed (2.2% positive). Three hundred twenty-two sets were completed with 96.3% meeting the performance standard. Compared to 2012 when two hundred forty-four sets were completed with 95.9% meeting the performance standard, and 2011 when 205 sets were completed (94.1% met the performance standard).

86.3% (264 establishments) were in Category 1, 5.9% (18 establishments) in Category 2T, 5.5% (17 establishments) in Category 2, and 2.3% (7 establishments) in Category 3. In 2012, 82.86% of ground beef establishments eligible for *Salmonella* testing were in Category 1.

Ground Chicken

In 2013, 453 samples were analyzed, with a total of 18% percent positive. The total percent of completed sample sets meeting the performance standard was 91.7%.

71.4% (5 establishments) of ground chicken establishments were in Category 1 at the end of 2013, with 1 establishment in category 2T, none in Category 2, and 14.3% (1 establishment) in Category 3. In 2012, 71.4% of ground chicken establishments eligible for *Salmonella* sampling were in Category 1.

Ground Turkey

In 2013, 217 samples were analyzed with a total percent positive at 15%, compared to 11% in 2012 (1,155 samples), 12.3% in 2011 (511 samples). Seven sets were completed and all passed for 2013, similar to 2012, when all 19 sets were completed and passed, and to 2011 when all 14 sets completed passed.

90.9% (20 establishments) of ground turkey establishments were in Category 1, with 1 establishment in Category 2T, 1 in Category 2, and none in Category 3, exactly the same as in 2012.

NOTE: FSIS is currently in the process of redefining the sampling frames for 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.

Comminuted Poultry

Table D1 summarizes *Salmonella* positive results for young chicken and turkey from June - December 2013 for the NRTE Comminuted Poultry Sampling Project initiated by Federal Register Notice FSIS–2012–0007:
<http://www.fsis.usda.gov/OPPDE/rdad/FRPubs/2012-0007.pdf>.

Table D2 summarizes *Campylobacter* positive results from June - December 2013 for young chicken and turkey comminuted products for the NRTE Comminuted Poultry Sampling Project.

Table A1
Percent Positive *Salmonella* Tests in the PR/HACCP Verification Testing Program
By Product Class and Calendar Year, 1998 – 2013

CY 2013											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	7.5	7,786	1.5%	2,372	6.5%	966	17.0%	0	0.0%	11,124	3.9%
Steers/Heifers	1.0	0	0.0%	0	0.0%	7	0.0%	0	0.0%	7	0.0%
Ground Beef	7.5	2,080	2.9%	11,157	1.5%	3,924	1.2%	0	0.0%	17,161	1.6%
Ground Chicken	44.6	144	13.0%	290	19.0%	19	42.0%	0	0.0%	453	18.0%
Ground Turkey	49.9	55	5.5%	130	12.0%	32	44.0%	0	0.0%	217	15.0%
Turkeys	1.7	1,468	1.2%	914	3.9%	30	6.7%	0	0.0%	2,412	2.3%

CY 2012											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	7.5	8,223	2.7%	2,171	8.2%	537	13.0%	2	0.0%	10,933	4.3%
Market Hogs	8.7	12	8.3%	0	0.0%	66	0.0%	0	0.0%	78	1.3%
Cows/Bulls	2.7	0	0.0%	26	0.0%	1	0.0%	0	0.0%	27	0.0%
Steers/Heifers	1.0	0	0.0%	116	2.6%	153	0.0%	0	0.0%	269	1.1%
Ground Beef	7.5	1,767	3.0%	8,987	1.8%	3,811	1.4%	100	3.0%	14,665	1.9%
Ground Chicken	44.6	273	34.0%	853	28.0%	144	29.0%	106	11.0%	1376	28.0%
Ground Turkey	49.9	689	12.0%	390	10.0%	10	30.0%	66	6.1%	1155	11.0%
Turkeys	1.7	1,318	1.3%	758	3.2%	75	9.3%	32	0.0%	2,183	2.2%

NOTE: Sampling for three product classes (market hog, cow/bull, and steer/heifer) represents follow-through samples from sets previously scheduled for these product classes which were carried to completion.

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%

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 – 2013

All Years 1998 - 2013										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Broilers	92,560	7.9%	33,035	12.5%	4,302	20.6%	54	7.4%	129,951	9.5%
Market Hogs	17,055	2.4%	21,523	5.0%	35,940	3.3%	108	0.9%	74,626	3.6%
Cows/Bulls	3,451	0.2%	19,111	1.2%	8,621	1.9%	0		31,183	1.3%
Steers/Heifers	14,105	0.1%	14,346	0.5%	16,520	0.4%	99	0.0%	45,070	0.3%
Ground Beef	17,024	3.7%	173,495	2.6%	105,334	1.6%	375	2.9%	296,228	2.3%
Ground Chicken	1,490	26.2%	4,270	24.1%	623	31.9%	106	11.3%	6,489	25.2%
Ground Turkey	9,914	21.8%	2,756	16.9%	528	12.1%	66	6.1%	13,264	20.3%
Turkeys	9,209	4.2%	4,280	4.0%	149	9.4%	32	0.0%	13,670	4.2%

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 – 2013***

CY 2013										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	163	98.2%	44	79.6%	12	75.0%	0		219	93.2%
Steers/Heifers	0		0		1	100.0%	0		1	100.0%
Ground Beef	40	90.0%	208	97.1%	74	97.3%	0		322	96.3%
Ground Chicken	4	100.0%	8	87.5%	0		0		12	91.7%
Ground Turkey	2	100.0%	5	100.0%	0		0		7	100.0%
Turkeys	23	95.7%	15	80.0%	0		0		38	89.5%

CY 2012										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Young Chicken	134	95.52%	35	77.14%	9	44.44%	0	0.00%	178	89.33%
Market Hogs	1	100.00%	0	0.00%	4	100.00%	0	0.00%	5	100.00%
Cows/Bulls	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
Steers/Heifers	0	0.00%	3	33.33%	5	100.00%	0	0.00%	8	75.00%
Ground Beef	30	93.33%	158	96.20%	54	96.30%	2	100.00%	244	95.90%
Ground Chicken	1	0.00%	8	75.00%	2	100.00%	2	100.00%	13	76.92%
Ground Turkey	12	100.00%	6	100.00%	0	0.00%	1	100.00%	19	100.00%
Turkeys	17	100.00%	12	91.67%	1	100.00%	3	66.67%	33	93.94%

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

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%

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, 1998 – 2013

All Years 1998 - 2013										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass	# Sets	% Pass
Broilers	1,829	94.59%	639	84.98%	66	60.61%	1	100.00%	2,535	91.28%
Market Hogs	315	95.56%	395	90.63%	634	94.16%	1	100.00%	1,345	93.46%
Cows/Bulls	60	98.33%	328	91.77%	143	86.71%	2	100.00%	533	91.18%
Steers/Heifers	175	100.00%	177	90.40%	201	94.03%	0		553	94.76%
Ground Beef	321	91.28%	3,192	94.49%	1,900	96.37%	9	88.89%	5,422	94.95%
Ground Chicken	25	80.00%	73	90.41%	10	90.00%	2	100.00%	110	88.18%
Ground Turkey	183	97.27%	51	96.08%	9	100.00%	1	100.00%	244	97.13%
Turkeys	157	97.45%	72	91.67%	1	100.00%	3	66.67%	233	95.28%

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, 2013**

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	131	74.43%	264	86.27%	5	71.42%	20	90.90%	27	77.14%	447	81.86%
2T	25	14.20%	18	5.88%	1	14.28%	1	4.54%	3	8.57%	48	8.79%
2	12	6.81%	17	5.55%	0	0	1	4.54%	3	8.57%	33	6.04%
3	8	4.54%	7	2.28%	1	14.28%	0	0	2	5.71%	18	3.29%
Total	176	100.00%	306	100.00%	7	100.00%	22	100.00%	35	100.00%	546	100.00%

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

Table A6
Percent Positive Qualitative (1 ml) *Campylobacter* Tests in the PR/HACCP Verification Testing Program
By Product Class and Calendar Year, 2011 – 2013

CY 2013											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samps	% Pos	# Samps	% Pos	# Samps	% Pos	# Samps	% Pos	# Samps	% Pos
Young Chicken	10.4	7,786	1.80%	2,372	17%	966	27%	0		11,124	7.20%
Turkeys	0.79	1,467	1.20%	914	4.30%	30	3.30%	0		2,411	2.40%

CY 2012											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	10.4	8,222	3.70%	2089	15.00%	459	32.00%	0	0.00%	10,770	7.00%
Turkeys	0.79	1318	1.40%	736	3.70%	28	0.00%	32	6.30%	2,114	2.30%

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.

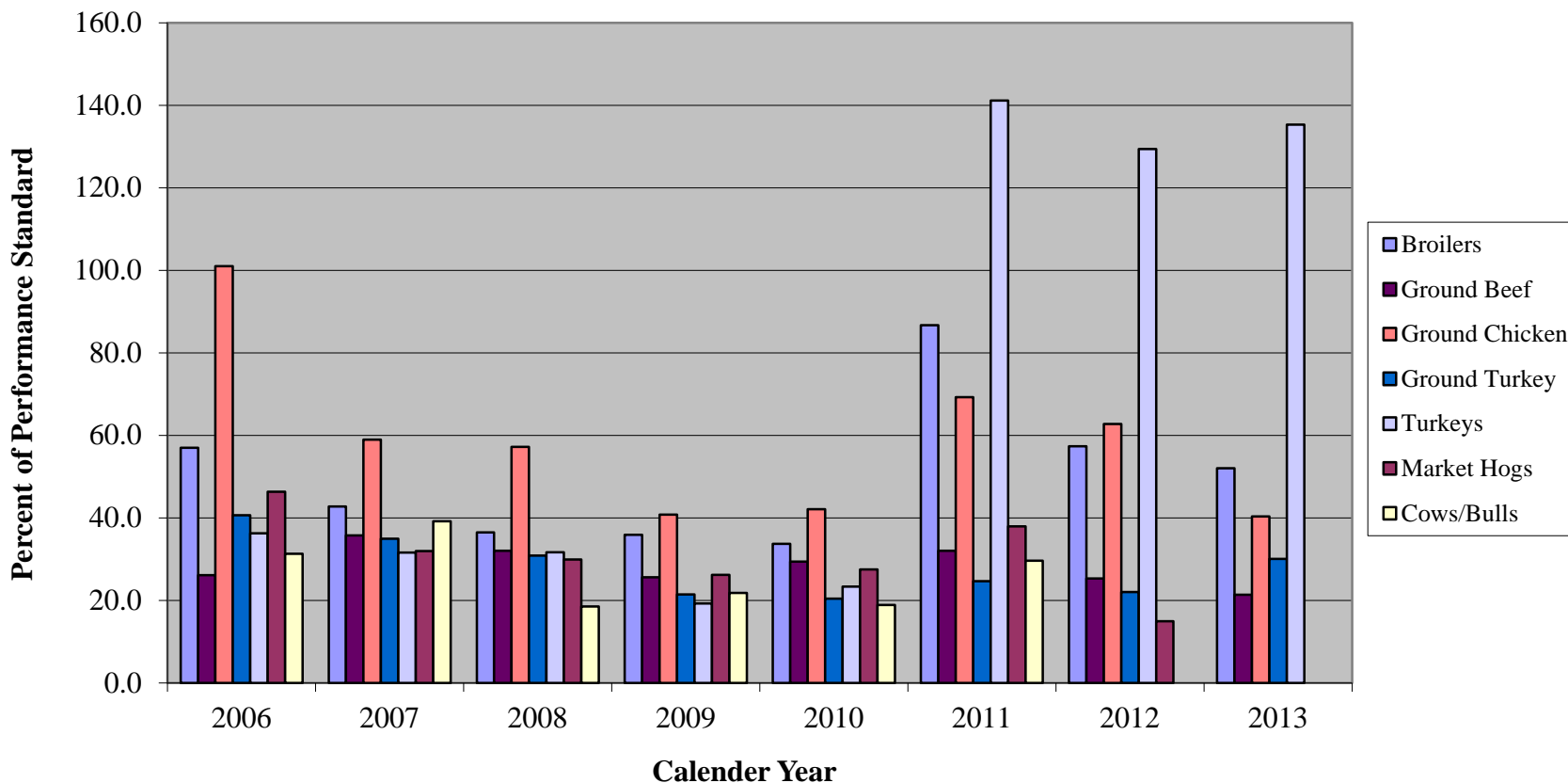
CY 2011											
Product	Baseline Prevalence (%)	Large		Small		Very Small		Unknown		All Sizes	
		# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	10.4	1,945	7.60%	448	16.30%	40	15.00%	0		2,433	9.30%
Turkeys	0.79	777	2.80%	309	7.80%	3	0.00%	0		1,089	4.20%

Table A7
Percent Positive Qualitative (1 ml) *Campylobacter* Tests in the PR/HACCP Verification Testing Program
Aggregated Results by Product Class 2011 - 2013

All Years 2011 - 2013										
Product	Large		Small		Very Small		Unknown		All Sizes	
	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos	# Samp	% Pos
Young Chicken	17,953	3.30%	4,909	15.89%	1,465	27.99%	0		24,327	7.33%
Turkeys	3,562	1.63%	1,959	4.59%	61	1.64%	32	6.25%	5,614	2.69%

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.

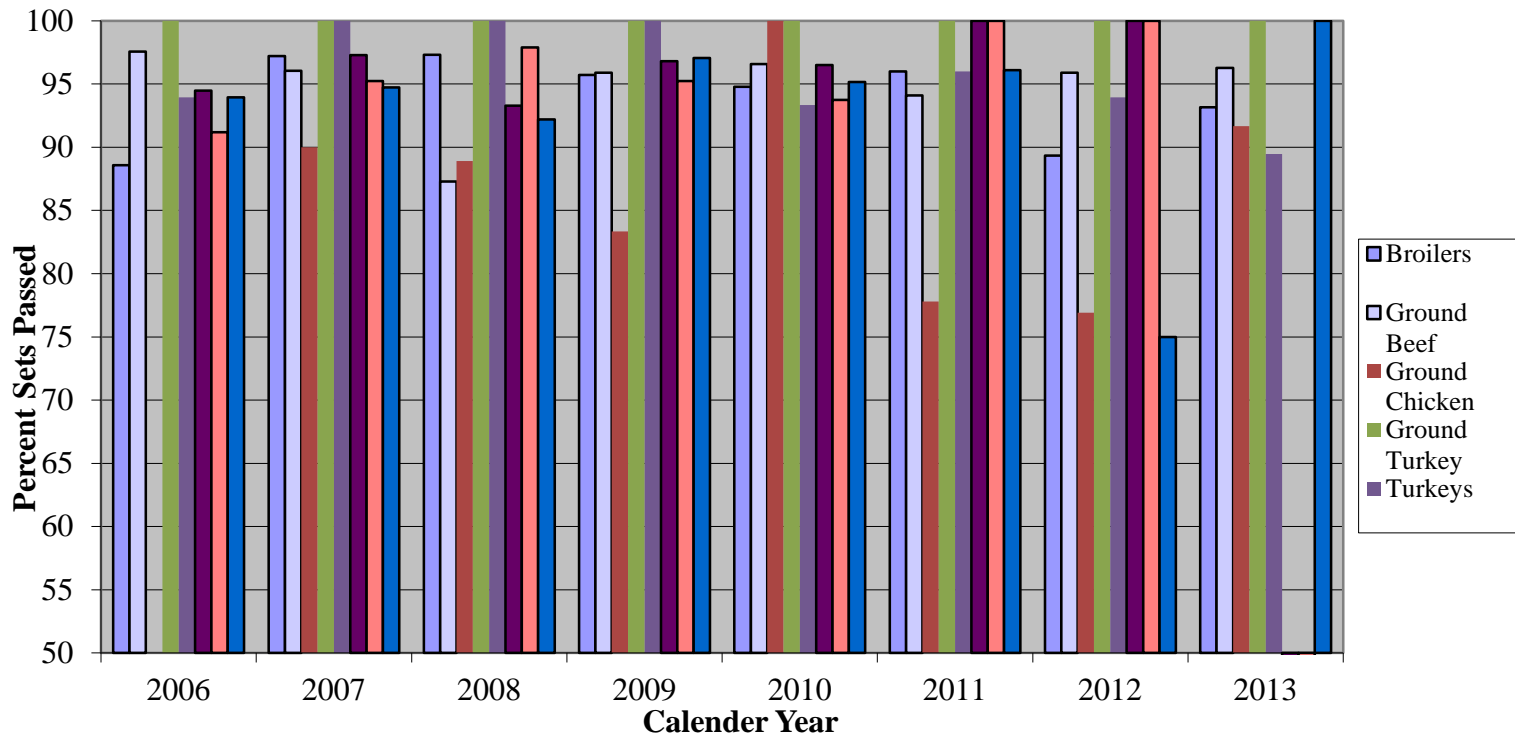
Figure B1
Comparison of Percent Positive *Salmonella* Tests in the PR/HACCP Verification Testing Program with Baseline Prevalence, by Calendar Year and Product Class, 2006 - 2013 *



* 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. Also, cow/bull, steer/heifer, and market hog data are omitted in this calculation for 2012 because there were not enough samples taken for a valid comparison.

Figure B2
Overall Percentages of Sample Sets Meeting *Salmonella* Performance Standards
By Calendar Year and Product Class, 2006 – 2013 *



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

NOTE: In 2006 the percentage of sets passing the performance standard for ground chicken was 50%, which is why it is not visible on this graph. 2011 uses new young chicken and turkey performance standards for entire year of data for purposes of this calculation. Also, beef and hog carcass data are omitted in this calculation for 2012 because there were not enough samples taken for a valid comparison.

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

	Year							
	2006	2007	2008	2009	2010	2011	2012	2013
Positive Enteritidis (%)	1.54	0.88	1.35	1.41	1.72	1.78	0.84	0.52
# Establishments	155	180	146	133	146	74	181	192

Table D1: Percent Positive *Salmonella* Tests (All Samples) in the NRTE Comminuted Poultry Sampling Project by Reported Finished Product Category – All Samples (June 1, 2013 to December 31, 2013)**

Product Group Finished Product		Overall Samples			Establishment Data		Establishment Percent Positive Distribution		
		Number Analyzed	Number Positive	Percent Positive	Plants Sampled	Avg Samples per Plant	Q1	Median	Q3
Chicken	A. Ground Chicken	691	292	42.26%	62	11.15	15.79%	34.17%	68.75%
	B. Mechanically Separated Chicken	697	578	82.93%	42	16.6	71.43%	92.67%	96.15%
	C. Other Comminuted Chicken	189	79	41.80%	24	7.88	20.10%	43.27%	70.83%
	Chicken Subtotal	1577	949	60.18%	101	15.61	21.05%	57.14%	90.48%
Turkey	D. Ground Turkey	660	141	21.36%	46	14.35	4.35%	20.00%	34.78%
	E. Mechanically Separated Turkey	66	30	45.45%	12	5.5	13.64%	36.93%	84.62%
	F. Other Comminuted Turkey	139	26	18.71%	22	6.32	0.00%	0.00%	33.33%
	Turkey Subtotal	865	197	22.77%	57	15.18	4.35%	16.67%	34.78%
Salmonella Grand Total		2442	1146	46.93%	143	17.08	15.38%	36.00%	80.00%

****NOTE:**

The finished product information is obtained here through inspection personnel responses on the sampling forms and is subject to further review by the Agency for future analyses.

Table D2: Percent Positive *Campylobacter* Tests (All Samples) in the NRTE Comminuted Poultry Sampling Project by Reported Finished Product Category - All Samples (June 1, 2013 to December 31, 2013) **

Product Group	Finished Product	Overall Samples			Establishment Data		Establishment Percent Positive Distribution		
		Number Analyzed	Number Positive	Percent Positive	Plants Sampled	Avg Samples per Plant	Q1	Median	Q3
Chicken	A. Ground Chicken	689	18	2.61%	62	11.11	0.00%	0.00%	0.00%
	B. Mechanically Separated Chicken	696	144	20.69%	42	16.57	4.17%	14.56%	26.09%
	C. Other Comminuted Chicken	190	2	1.05%	25	7.6	0.00%	0.00%	0.00%
	Chicken Subtotal	1575	164	10.41%	101	15.59	0.00%	0.00%	11.54%
Turkey	D. Ground Turkey	659	6	0.91%	46	14.33	0.00%	0.00%	0.00%
	E. Mechanically Separated Turkey	66	3	4.55%	12	5.5	0.00%	0.00%	0.00%
	F. Other Comminuted Turkey	139	0	0.00%	22	6.32	0.00%	0.00%	0.00%
	Turkey Subtotal	864	9	1.04%	57	15.16	0.00%	0.00%	0.00%
<i>Campylobacter</i> Grand Total		2439	173	7.09%	143	17.06	0.00%	0.00%	6.25%

**NOTE:

The finished product information is obtained here through inspection personnel responses on the sampling forms and is subject to further review by the Agency for future analyses.