

Salmonella

Annual Summary

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Division of Bacterial and Mycotic Diseases
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Table of Contents

Changes to the National <i>Salmonella</i> Surveillance System	ii
Annual Summary Highlights for 2003	ii
Figure 1 (Isolation rates of <i>S. Berta</i>, United States, 1968-2003)	iii
Adoption of the Kauffmann-White Scheme for designation of <i>Salmonella</i> serotypes	iv
Overview of <i>Salmonella</i> Serotype Designation	iv
<i>Salmonella</i> O serogroups and associated O antigens	vii
H (flagellar) antigens of <i>Salmonella</i>	viii
Acknowledgements	ix
References	ix
Suggested Reading	ix
TABLE 1	1
The 20 most frequently reported <i>Salmonella</i> serotypes from Human sources reported to CDC in 2003	
TABLE 1a	2
The 20 most frequently reported <i>Salmonella</i> serotypes from Clinical and Non-Clinical Nonhuman sources reported to CDC and NVSL in 2003	
TABLE 2 / FIGURE 2	3
<i>Salmonella</i> isolates from Human sources by Age, and Sex, 2003	
TABLE 3	4
<i>Salmonella</i> isolates from Human sources by Serotype and Year, 1993-2003	
TABLE 3a	23
<i>Salmonella</i> partially serotyped isolates from Human sources by Serotype and Year, 1993-2003	
TABLE 4	25
<i>Salmonella</i> isolates from Human sources by Serotype, Geographic Region and State, 2003	
TABLE 5	56
<i>Salmonella</i> isolates from Human sources by Serotype and Geographic Region, 2003	
TABLE 6	65
Clinical <i>Salmonella</i> isolates from Nonhuman sources reported to CDC and NVSL by Serotype and Source, 2003	
TABLE 7	71
Non-Clinical <i>Salmonella</i> isolates from Nonhuman sources reported to CDC and NVSL by Serotype and Source, 2003	
TABLE 8	75
Percent change in <i>Salmonella</i> isolates, Top 20 serotypes	
FIGURE 3	76
<i>Salmonella</i> Enteritidis isolation rates per 100,000 population by Region: 1970-2003	
FIGURE 4	77
Top 4 <i>Salmonella</i> serotypes in the United States, isolation rates per 100,000 population: 1970-2003	

National *Salmonella* Surveillance System Annual Summary, 2003

This issue of the Annual Summary of the National *Salmonella* Surveillance System contains surveillance data on reported laboratory-confirmed *Salmonella* isolates in the United States for the year 2003. The National *Salmonella* Surveillance System collects reports of isolates of *Salmonella* from human sources from the United States. This information is reported through the Public Health Laboratory Information System (PHLIS), an electronic reporting system, by the State Public Health Laboratory Directors and State and Territorial Epidemiologists to the Foodborne and Diarrheal Diseases Branch (FDDB) and the Biostatistics and Information Management Branch (BIMB) of the Division of Bacterial and Mycotic Diseases in the National Center for Infectious Diseases.

The National *Salmonella* Surveillance System is based on data collected by state and territorial public health laboratories. *Salmonella* isolates are submitted to the state public health laboratory by clinical diagnostic laboratories. The state and territorial laboratories confirm the isolates as *Salmonella*, perform serotyping according to the Kauffmann-White scheme, and submit the data for reporting through PHLIS. Unusual or difficult isolates are forwarded to the National *Salmonella* Reference Laboratory at the Centers for Disease Control and Prevention for further characterization or confirmation. These results are reported back to the state laboratory, where they are reported through PHLIS.

The capture of isolates in the National *Salmonella* Surveillance System is considered to be fairly complete. However, some *Salmonella* isolates may not be forwarded to public health laboratories, and therefore are not reported. In addition, irrespective of the surveillance system, many cases of *Salmonella* illness are not reported because the ill person does not seek medical care, the health-care provider does not obtain a specimen for diagnosis, or the laboratory does not perform the necessary diagnostics tests. The results of surveillance reported herein should be considered underestimates. In addition, not every state submitted data in 2003.

The National *Salmonella* Surveillance System database is dynamic; the number of isolates reported for previous years may change according to the addition or correction of isolate reports. For example, the number of human *Salmonella* isolates published in the 2000 Annual Summary for 2000 was 32,022, whereas the number of isolates reported for 2000 in this Annual Summary is 33,556.

The number of isolates reported by geographical area (e.g. state) represents the area where laboratory confirmation and serotyping was performed. In some instances, the reporting area is not the same as the area of residence of the person from whom the isolate was obtained. For *Salmonella* serotype Typhi, only the first isolation in a year for each person is counted. For non-Typhi serotypes, only the first isolation within a thirty day period for each person is counted, given that the serotype and clinical source (e.g. stool or blood) are the same.

The data presented for *Salmonella* isolates from animals and related sources (i.e. environment and feeds) are gathered from isolates submitted to the U.S. Department of Agriculture, Animal and Plant Health Inspection Services, National Veterinary Services Laboratories (USDA/APHIS/NVSL) for serotyping. These isolates are submitted by animal disease diagnostic laboratories and the USDA, Food Safety and Inspection Service (FSIS) laboratories throughout the United States. Data from other United States laboratories that serotype *Salmonella* from animals and related sources and submit isolates to the NVSL are also included in this report. *Salmonella* serotyping results from clinical cases of animal disease are designated as "clinical" and shown in Table 6. Serotyping results from herd and flock monitoring and surveillance, feed sample testing, environmental testing, research projects, and isolates from USDA, FSIS food testing programs are designated as "nonclinical" (Table 7). Samples from non-human sources are tested for *Salmonella* for a variety of purposes and are obtained in a variety of ways. The sampling is therefore neither complete nor random and undoubtedly has sampling biases. Any interpretation of data should consider this limitation.

The Statistical Outbreak Detection Algorithm (SODA), developed by BIMB and FDDB, is a statistical algorithm based on the National *Salmonella* Surveillance System. It is designed to detect unusual clusters of isolates of *Salmonella* infection. SODA compares current *Salmonella* isolates reported through PHLIS by serotype to a 5-year historical baseline for that serotype and week to detect unusual increases from the baseline. Analyses can be conducted at state, regional, or national levels. Since 1996, SODA has been implemented at CDC and selected state health departments. If you would like more information on SODA, please call the PHLIS Helpdesk at telephone number (404) 639-3365.

Changes to the National *Salmonella* Surveillance System

In 2002, the National *Salmonella* Surveillance System implemented several changes in nomenclature and in surveillance practices. i) In order to improve the comparability of United States surveillance data with data from other countries, serotypes are now designated according to the Kauffmann-White Scheme (see below). ii) Reporting of *Salmonella* serotype I 4,[5],12:i:- (see discussion of this serotype below) was inconsistent in the past due to variability in the nomenclature used to report this serotype. This resulted in many

isolates of this serotype being reported as "Group B" or "Subspecies I". Beginning with the 2002 data, the submitted designation for this serotype was converted to the standard formula whenever possible. iii) Many non-subspecies I serotypes were not listed in the surveillance summaries in the past; instead, these isolates were reported by O group or subspecies only. Beginning with the 2002 surveillance data, all serotype formulas that were submitted to the national surveillance system, regardless of subspecies, were incorporated into the surveillance database. iv) Similarly, most "variants" of serotypes (monophasic, nonmotile or rough isolates) were not listed by their variant formulas in the past; instead, these isolates were reported by O group or subspecies only. Beginning with the 2002 surveillance data, all serotype variants that were submitted to the national surveillance system were converted to standard serotype formulas whenever possible and incorporated into the surveillance database. We hope that the changes in our surveillance practices will improve the accuracy of the surveillance data and enhance the detection of newly emerging serotypes. These changes should be kept in mind when comparing 2002 and 2003 data to previous years. The increased numbers of *Salmonella* serotype I 4,[5],12:i:-, of some non-subspecies I serotypes, and of serotype variants since 2002 may be due at least in part to improved surveillance.

In order to improve the utility of partial serotype data, we are changing the way that isolates that are not fully serotyped are designated and reported in PHLIS. In the past, these isolates were reported primarily by serogroup. While serogroups A through E are composed mainly of subspecies I serotypes, many of the other O serogroups are represented in several different subspecies. Most of the serogroups higher than E include serotypes from more than one subspecies, and nearly half (15 of 37) include serotypes from five different subspecies. Reporting isolates by serogroup alone combines unrelated isolates of different subspecies in the same serogroup category. Thus, we would like to move away from the "serogroup" categories. When full serotype information is not available, isolates are identified first by subspecies, then O serogroup and any additional serotype antigens. All available serotype information should be submitted to PHLIS (subspecies, O serogroup, O antigens, H antigens, whether one or two H antigens are detected, rough or mucoid status if appropriate). Partially serotyped isolates are listed in Table 3a.

Annual Summary Highlights for 2003

Human Sources

A total of 33,589 *Salmonella* isolates were reported from participating public health laboratories in 2003. Forty-nine states and the District of Columbia reported isolates; Florida, Montana and the District of Columbia reported partial serotype information. No isolates were reported from Texas. This represents a 9% decrease compared with 1993 and an increase over 2002 (3%). The national rate of reported *Salmonella* isolates in 2003 was 11.6 per 100,000 population based on 2003 census population figures for the United States.

Similar to other years, *Salmonella* was isolated most frequently from children under 5 years of age, accounting for 25% of isolates (Table 2). About 10% of isolates came from persons in each of the second through fifth decades of life, with declining numbers thereafter. The distribution of isolates between the sexes was different, with a greater number of isolates from male infants and children and fewer isolates from male adults and older persons (Table 2).

The twenty most common serotypes of *Salmonella* in 2003 are listed in Table 1. These represent 78% of all *Salmonella* isolates. Of the top twenty serotypes, the two most common serotypes, *S. Typhimurium* and *S. Enteritidis*, had substantial decreases in numbers from 1993-2003; the largest percent decrease in numbers compared with 1993 were *S. Hadar* and *S. Enteritidis* (Table 8). A dramatic increase in *S. Mississippi* (181% from 1993 to 2003) mainly occurred before 1998. *S. Newport* and *S. Javiana* had important increases in numbers from 1993 to 2003 (160% and 159% respectively). In 2003, serotypes *S. Bareilly* and *S. Stanley* increased in rank to be included in the top twenty serotypes, whereas *S. Berta* and *S. Poona* dropped from the top twenty serotypes compared with 2002.

Salmonella serotype I 4,[5],12:i:- was introduced as the 18th most common serotype in 2002 and has increased in rank to 14th in 2003. The serotype has been tracked in the National Surveillance system since 1998, though many isolates were classified as only "Subspecies I" or "Group B" in the past. Recent efforts to correctly classify this serotype may be responsible for some of the increase in numbers identified since 2002. It is unknown how many of the 417 isolates reported as Subspecies I, Group B in 2003 could be this serotype (Table 3a). In 1998, this serotype was the fourth most commonly identified in Spain; genetic analysis of the Spanish isolates revealed a close relationship to *S. Typhimurium* (1). Many U.S. isolates of this serotype were characterized by pulsed field gel electrophoresis (PFGE) and the patterns submitted to PulseNet, the National Molecular Subtyping Network for Foodborne Disease Surveillance. The PFGE patterns for most *S. I 4,[5],12:i:-* isolates were closely related to *S. Typhimurium* PFGE patterns, indicating that they are most likely variants of *S. Typhimurium*.

The three most common serotypes of *Salmonella* in 2003 (*Typhimurium*, *Enteritidis*, and *Newport*) accounted for 46% of isolates. Compared with 1993, the frequency rank of *S. Typhimurium* and *S. Enteritidis* in 2003 remained first and second respectively, though in 1994-1996 their rank was temporarily reversed (Figure 4). A large proportion of *S. Typhimurium* isolates were resistant to multiple antimicrobial drugs; in a 2002 national survey, 21% were resistant

to one or more drugs and 30% had a five-drug resistance pattern characteristic of a single phage type, DT104 (2). Similarly, *S. Newport* has emerged as a major multidrug-resistant pathogen. In 2002, 53 (23%) of 239 *S. Newport* isolates submitted to the National Antimicrobial Resistance Monitoring System were resistant to at least nine of 17 antimicrobial agents tested, including extended-spectrum cephalosporins (3). Similar to other years, there were marked regional differences in the frequency of *Salmonella* isolates among serotypes. The rate of isolations by region has been followed closely for *S. Enteritidis* as a means of assessing the impact of egg safety regulations and industry improvements. As indicated in Figure 2, *S. Enteritidis* rates of isolation had been relatively high in New England, Mid Atlantic and Pacific regions, but have shown significant decreases since 1995. Though New England had an increase in *S. Enteritidis* in 2000 and 2001 compared to 1999, the isolation rate decreased in 2002 and 2003.

Beginning in 1984, *S. Berta* isolates increased from a baseline rate of 0.023/100,000 persons to a peak of 0.27 in 1989 (Figure 1). From 1995 and forward the isolation of *S. Berta* decreased to rates prior to 1985. Again in 1999 we observed a new increase, this time peaking in 2001 with a rate of 0.12. In 2003 the isolation rate of *S. Berta* has decreased by 42% to 0.07 and *S. Berta* has dropped from the 20 most common serotypes. Through the years 1968 to 2003 *S. Berta* has most commonly been identified from non-clinical samples from turkey and chicken sources. There are currently no good explanations to the fluctuations in the isolation rate of *S. Berta*; although *S. Berta* has decreased it has still been implicated in recent foodborne outbreaks.

Non-human Sources

Data on *Salmonella* isolates obtained from non-human sources can help identify possible sources of human illness. *S. Typhimurium*, the most common serotype in humans, is identified most commonly from clinical samples from bovine sources, and from non-clinical samples from chicken sources. *S. Enteritidis* and *S. Heidelberg*, the second and fourth most common serotype in humans, respectively, are identified most commonly from clinical and non-clinical chicken sources (Table 6 and 7).



Adoption of the Kauffmann-White Scheme for designation of *Salmonella* serotypes

Salmonella serotyping has been the cornerstone for epidemiological surveillance and outbreak investigations for this important pathogen. The National *Salmonella* Surveillance system has tracked *Salmonella* isolates by serotype since 1968. New subtyping methods have come and gone, but serotyping continues to provide essential subtype information for *Salmonella*. For example, PulseNet, our state-of-the-art genotyping system for *Salmonella*, relies on accurate serotype information as the "first-tier" subtype information. PFGE pattern determination, by itself, does not replace serotyping, but rather subdivides within serotype.

The Kauffmann-White Scheme for designation of *Salmonella* serotypes is maintained by the WHO Collaborating Centre for Reference and Research on *Salmonella* at the Institut Pasteur and is used by most of the world. Up until 2002, the CDC used a slightly different version of the scheme, the "Modified Kauffmann-White Scheme". A unified format for serotype designation is essential for accurate surveillance via PulseNet, Global SalmSurv, and other international networks. Therefore, to improve the accuracy of our surveillance data and to make us in-step with the rest of world with respect to *Salmonella* serotype designation, the Centers for Disease Control and Prevention adopted the Kauffmann-White Scheme on January 1, 2003.

The adoption of the Kauffmann-White Scheme affected only a few of the more common serotypes. The primary differences between the two schemes are:

i) *Salmonella* are divided into six subspecies that can be differentiated by biochemical and genetic tests. Under the Kauffmann-White Scheme, subspecies I serotypes are named; subspecies II through VI serotypes are identified by formula. The Modified Kauffmann-White Scheme used names for those subspecies II through VI serotypes that were designated before 1968 and formulas for those serotypes identified after 1968. With the adoption of the Kauffmann-White scheme, all named serotypes are subspecies I; serotypes from all other subspecies are designated by formula. In 2002, there were four named serotypes among the top 100 serotypes that did not belong to subspecies I and were effected by this change.

- *S. Marina* is now designated as *S. IV 48:g,z₅₁*:-
- *S. Flint* is now designated as *S. IV 50:z₄,z₂₃*:-
- *S. Kralendyk* is now designated as *S. IV 6,7:z4,z24*:-
- *S. Chameleon* is now designated as *S. IV 16:z4,z32*:-

ii) Under the Kauffmann-White Scheme, serogroups E2 and E3 were combined with serogroup E1. This reflects the fact that the antigenic changes in serogroups E2 and E3 are the result of lysogenic conversion by bacteriophages and thus represent minor variants of serogroup E1 serotypes. The Modified Kauffmann-White Scheme used separate serotype names for these variants. Two serotypes in the top 100 in 2002 that were affected by the merging of serogroups E2 and E3 with serogroup E1.

- *S. Newington* is now *S. Anatum* variety (var.) 15+
- *S. Newbrunswick* is now *S. Give* var. 15+.

iii) Under the Kauffmann-White Scheme, two biotypes of *S. Paratyphi B* are recognized; they are differentiated primarily by the ability to ferment tartrate. *S. Paratyphi B* is tartrate negative and is associated with more severe, typhoid fever-like disease. *S. Paratyphi B* var. L-tartrate + (also referred to as "*S. Paratyphi* var. Java") is tartrate positive and commonly associated with gastroenteritis. *S. Paratyphi B* var. L-tartrate + was known as "*S. Java*" in the Modified Kauffmann-White Scheme. The two biovars of *S. Paratyphi B* have been a source of confusion in the past because they have the same antigenic formula (I 1,4,[5],12:b:1,2), and are differentiated only by biotype. It is essential that the tartrate test be performed to accurately identify and report the two biotypes.

Overview of *Salmonella* Serotype Designation

1) *Salmonella* Taxonomy¹

The **genus *Salmonella*** divided into two species, *Salmonella enterica* and *Salmonella bongori*.

Salmonella enterica is further subdivided into 6 subspecies that are designated by names or Roman numerals. The Roman numerals are simpler and more commonly used. Subspecies IIIa and IIIb were historically considered a separate genus, ***Arizonae***, and are still sometimes referred to by this name.

<i>Salmonella enterica</i> subspecies	
I	<i>enterica</i>
II	<i>salamae</i>
IIIa	<i>arizonae</i>
IIIb	<i>diarizonae</i>
IV	<i>houtenae</i>
VI	<i>indica</i>

Salmonella bongori was originally designated *S. enterica* **subspecies V**. It has since been determined to be a separate species of *Salmonella*. However, for simplicity and convenience, these strains are commonly referred to as "subspecies V" for the purpose of serotype designation.

2) *Salmonella* Serotype Antigens

Salmonella serotype is based on the immunoreactivity of two surface structures, **O** and **H antigen**.

O antigen is a carbohydrate (also called a polysaccharide) that is the outermost component of lipopolysaccharide. It is a polymer of **O subunits**; each O subunit is typically composed of four to six sugars depending on the O antigen. Variation in O antigen results from variation in the sugar components of the O subunit, from variation in the nature of the covalent bond between the sugars of the subunit, and from variation in the nature of the linkage between the O subunits that form the O antigen polymer.

O antigens are designated by numbers and are divided into **O serogroups**, also called **O groups**. O groups are designated by the primary **O factor(s)** that are associated with the group. Many of the common O groups were originally designated by letter and are still commonly referred to by letter (e.g., *S. Typhimurium* belongs to Group O:4 or Group B, *S. Enteritidis* belongs to group O:9 or Group D1; *S. Paratyphi A* belongs to Group O:2 or Group A).

Additional O factors are associated with some O groups and are often variably present or variably expressed. The *Salmonella* O groups and the additional O antigens that may be present in serotypes of that group are listed below. When multiple O factors are present, they are listed sequentially and separated by commas.

H antigen is the filamentous portion of the bacterial flagella; H antigen is made up of protein subunits called flagellin. The ends of flagellin are conserved and give the filament its characteristic structure. The antigenically variable portion of flagellin is the middle region of the protein, which is surface-exposed. ***Salmonella*** is unique among the enteric bacteria in that it can express two different H antigens, which are encoded by two different genes. Typically, expression of the two genes is coordinated so that only one flagellar antigen is expressed at a time in a single bacterial cell. The two distinct flagellar antigens are referred as Phase 1 and Phase 2. "**Monophasic**" isolates are those that express only a single flagellin type. These occur naturally in some serotypes (e.g., *S. Enteritidis*, *S. Typhi*, most subspecies IIIa and IV serotypes), or can occur through the inactivation or loss of the gene encoding the Phase 1 or Phase 2 antigen.

The H antigens of *Salmonella* are listed below. Some antigens are composed of multiple factors, which are separated by commas; for example, the second phase antigen of *S. Typhimurium* is composed of factors 1 and 2. H antigens composed of multiple factors are grouped into complexes.

3) *Salmonella* Serotype Identification

Salmonella serotypes are typically identified in a cascade of tests. First, an isolate is identified and the subspecies is determined, typically by biochemical testing. O antigens and H antigens are detected in independent agglutination assays using antisera that react with groups of related antigens or a single antigen. Both H antigens can sometimes be detected in a single culture, particularly for older strains or for isolates that have been passed multiple times. When only one H antigen is detected, the isolate is inoculated onto the top of a tube of **phase reversal media**, a semisolid media containing antisera to the H antigen that has already been identified. Organisms expressing the previously detected H antigen are immobilized by the added antisera and grow only at the top of the tube. Organisms expressing the second H antigen are able to move away from the top of tube, evidenced by growth throughout the tube. The second H antigen is then determined using organisms recovered from the bottom of the phase reversal media.

4) *Salmonella* Serotype Designation

All *Salmonella* serotypes can be designated by a formula. Additionally, subspecies I serotypes are given a name (e.g., Typhimurium, Enteritidis, Typhi, etc).

The typical format for a serotype formula is:

Subspecies [space] O antigens [colon] Phase 1 H antigen [colon] Phase 2 H antigen

Examples:

I 4,5,12:i:1,2 (*S. Typhimurium*)

I 4,12:i:1,2 (*S. Typhimurium*)

I 9,12:g,m:- (*S. Enteritidis*)

II 47:b:1,5 (*S. II 47:b:1,5*)

IV 48:g,z₅₁:- (*S. IV 48:g,z₅₁:-*)

IIIb 65:(k):z (*S. IIIb 65:(k):z*)

Other conventions:

- * Some O and H factors are variably present. This is indicated in the generic serotype formula by underline when the factor is encoded on a bacteriophage (e.g., 1) or by square brackets (e.g., [5]) when the antigen is variably present. For an individual isolate, if the variable factor is detected it is included in the formula without additional notation. If the variable factor is not detected, it is not listed in the formula. Weakly recognized antigens are indicated by parentheses (e.g., (k)).
- * The absence of an H antigen is indicated by a minus sign (“-”) for the particular phase. For example, the “monophasic Group B” isolates that are becoming more common in the US are designated as “S. I 4,5,12:i:-” or “S. I 4,12:i:-”. Nonmotile isolates (express no H antigen) are indicated by minus signs in both phases, but can also be designated by “NM” or “nonmotile” in place of the H antigens.
- * Isolates that do not express O antigen (rough isolates) or express a capsule that prevents immunologic detection of the O antigen (mucoid isolates) are indicated by “O Rough” or “Mucoid” in place of the O antigen.
- * Rarely, isolates express a third H antigen that is noted by a colon followed by the antigen after the Phase 2 H antigen (e.g., *S. II 13,23:b:[1,5]:z42*, formerly *S. Acres*)

5) *Salmonella* Serotype Statistics

There were 2541 *Salmonella* serotypes as of 2002; approximately 60% belong to subspecies I. In the US, approximately 99% of reported human isolates belong to subspecies I. The “top 10” serotypes account for approximately 74% of all isolates reported in the US; the “top 100” serotypes account for about 98% of all isolates. Among the top 100 serotypes, only *S. IV 48:g,z₅₁:-* (formerly *S. Marina*), *S. IV 50:z4,z23:-* (formerly *S. Flint*), *S. IV 6,7:4,z24:-* (formerly *S. Kralendyk*), and *S. IV 16:z4,z32:-* (formerly *S. Chameleon*) are not subspecies I. Among the non-subspecies I isolates, subspecies IV isolates are the most common, followed by subspecies IIB, IIIa, and II. Subspecies VI and *S. bongori* isolates are very rare.

- ¹ According to the Bacteriological Code, the legitimate species name for *S. enterica* is *S. choleraesuis*, and there are a few other differences from the nomenclature described. The official taxonomic designations are confusing and proposals to change them are currently under consideration. The taxonomy described here is used by most laboratories worldwide, including the CDC.

Salmonella O serogroups and associated O antigens

O Group (number designation)	O Group (letter designation)	Antigens present in all serotypes	Additional antigens that may be present in some serotypes
2	A	2,12	1
4	B	4,12	1; 5; 27
7	C1	6,7	14; (Vi)
8	C2	8	6; 20
9	D1	9,12	1; (Vi)
9,46	D2	9,46	none
9,46,27	D3	9,12,46,27	1
3,10	E1	3,10	15; 15,34
1,3,19	E4	1,3,19	10; 15
11	F	11	none
13	G	13	1; 22; 23
6,14	H	6,14	1; 24; 25
16	I	16	none
17	J	17	none
18	K	18	6; 14
21	L	21	none
28	M	28	none
30	N	30	none
35	O	35	none
38	P	38	none
39	Q	39	none
40	R	40	1
41	S	41	none
42	T	42	1
43	U	43	none
44	V	44	1
45	W	45	none
47	X	47	1
48	Y	48	none
50	Z	50	none
51		51	1
52		52	none
53		53	1
54 (provisional)		54	21; 3; 3,15; 4,12; 8,20; 6,7
55		55	none
56		56	none
57		57	none
58		58	none
59		59	1
60		60	none
61		61	none
62		62	none
63		63	none
65		65	none
66		66	none
67		67	none

H (flagellar) antigens of *Salmonella*

1 complex:	1,2 1,5 1,6 1,7 1,2,5 1,2,7 1,5,7 1,6,7	Other antigens (not part of a complex):	a b c d e,h i k (k)
EN complex:	e,n,x e,n,x,z15 e,n,z15		r r,i y z
G complex:	f,g f,g,m,t f,g,s f,g,t g,m g,m,p,s g,m,q g,m,s g,m,s,t g,m,t g,p g,p,s g,p,u g,q g,s,q g,s,t g,t g,z51 g,z62 g,z63 g,z85 m,p,t,u m,t		z6 z10 z29 z35 z36 z36,z38 z38 z39 z41 z42 z44 z47 z50 z52 z53 z54 z55 z56 z57 z60 z61 z64 z65
L complex:	l,v l,w l,z13 l,z13,z28 l,z28		z67 z68 z69 z71
Z4 complex:	z4,z23 z4,z23,z32 z4,z24 z4,z32		z81 z83 z87 z88

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Suggested Reading

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TABLE 1**The Top 20 most frequently reported *Salmonella* serotypes from Human sources reported to CDC in 2003**

Human 2003			
Rank	Serotype	Reported	Percent
1	S. Typhimurium *	6631	19.7
2	S. Enteritidis	4863	14.5
3	S. Newport	3847	11.5
4	S. Heidelberg	1810	5.4
5	S. Javiana	1659	4.9
6	S. Montevideo	849	2.5
7	S. Saintpaul	823	2.5
8	S. Muenchen	781	2.3
9	S. Oranienburg	554	1.6
10	S. Infantis	539	1.6
11	S. Braenderup	530	1.6
12	S. Agona	510	1.5
13	S. Thompson	494	1.5
14	S. I 4,[5],12:i:-	489	1.5
15	S. Mississippi	438	1.3
16	S. Typhi	359	1.1
17	S. Paratyphi B var. L(+) tartrate+	331	1.0
18	S. Hadar	280	0.8
19	S. Bareilly	234	0.7
20	S. Stanley	224	0.7
	Sub Total	26245	78.1
	All Other Serotyped	5239	15.6
	Unknown	735	2.2
	Partially serotyped isolates	1351	4.0
	Rough or nonmotile isolates	19	0.1
	Sub Total	7344	21.9
	Total	33589	100
NOTE: ----- * Typhimurium includes var. 5- (Formerly var. Copehagen)			

TABLE 1a

**The Top 20 most frequently reported Salmonella serotypes from
Clinical and Non-Clinical Nonhuman sources reported to CDC and NVSL in 2003**

Clinical Nonhuman 2003			
Rank	Serotype	Reported	Percent
1	S. Typhimurium *	1239	23.1
2	S. Newport	888	16.6
3	S. Agona	240	4.5
4	S. Choleraesuis **	173	3.2
5	S. Derby	157	2.9
6	S. Heidelberg	147	2.7
7	S. Anatum	141	2.6
8	S. Montevideo	141	2.6
9	S. Kentucky	133	2.5
10	S. Senftenberg	107	2.0
11	S. Muenster	99	1.8
12	S. Dublin	92	1.7
13	S. Infantis	87	1.6
14	S. 14,[5],12:i:-	74	1.4
15	S. Oranienburg	67	1.3
16	S. Uganda	66	1.2
17	S. Hadar	62	1.2
18	S. Enteritidis	59	1.1
19	S. Saintpaul	55	1.0
20	S. Braenderup	51	1.0
	Sub Total	4078	76.1
	All Other Serotyped	1225	22.9
	Rough or nonmotile isolates	56	1.0
	Sub Total	1281	23.9
	Total	5359	100

NOTE:

* Typhimurium includes var. 5- (Formerly var. Copehagen)
** Choleraesuis includes var. Decatur and Kunzendorf

Non-Clinical Nonhuman 2003			
Rank	Serotype	Reported	Percent
1	S. Typhimurium *	806	14.2
2	S. Heidelberg	786	13.8
3	S. Senftenberg	641	11.3
4	S. Hadar	467	8.2
5	S. Kentucky	467	8.2
6	S. Newport	290	5.1
7	S. Mbandaka	195	3.4
8	S. Muenster	183	3.2
9	S. Agona	134	2.4
10	S. Bredeney	129	2.3
11	S. Montevideo	124	2.2
12	S. Braenderup	90	1.6
13	S. Enteritidis	86	1.5
14	S. Saintpaul	63	1.1
15	S. Thompson	63	1.1
16	S. Schwarzengrund	62	1.1
17	S. Anatum	58	1.0
18	S. Worthington	55	1.0
19	S. Derby	51	0.9
20	S. Reading	51	0.9
	Sub Total	4801	84.6
	All Other Serotyped	854	15.1
	Rough or nonmotile isolates	21	0.4
	Sub Total	875	15.4
	Total	5676	100

NOTE:

* Typhimurium includes var. 5- (Formerly var. Copehagen)

TABLE 2

**Salmonella isolates from Human sources
by Age Group and Sex, 2003**

Age Group	Sex			Total
	Female	Male	Unknown	
< 1 Year	1394	1556	191	3141
1 to 4 Years	2379	2762	248	5389
5 to 9 Years	1237	1492	106	2835
10 to 19 Years	1378	1567	133	3078
20 to 29 Years	1634	1486	127	3247
30 to 39 Years	1617	1313	84	3014
40 to 49 Years	1653	1284	95	3032
50 to 59 Years	1371	983	65	2419
60 to 69 Years	969	690	54	1713
70 to 79 Years	854	552	45	1451
80+ Years	788	420	135	1343
Unknown Age	754	684	1489	2927
	16028	14789	2772	33589

FIGURE 2

**Salmonella Isolates from Human sources
by Age Group and Sex, 2003**

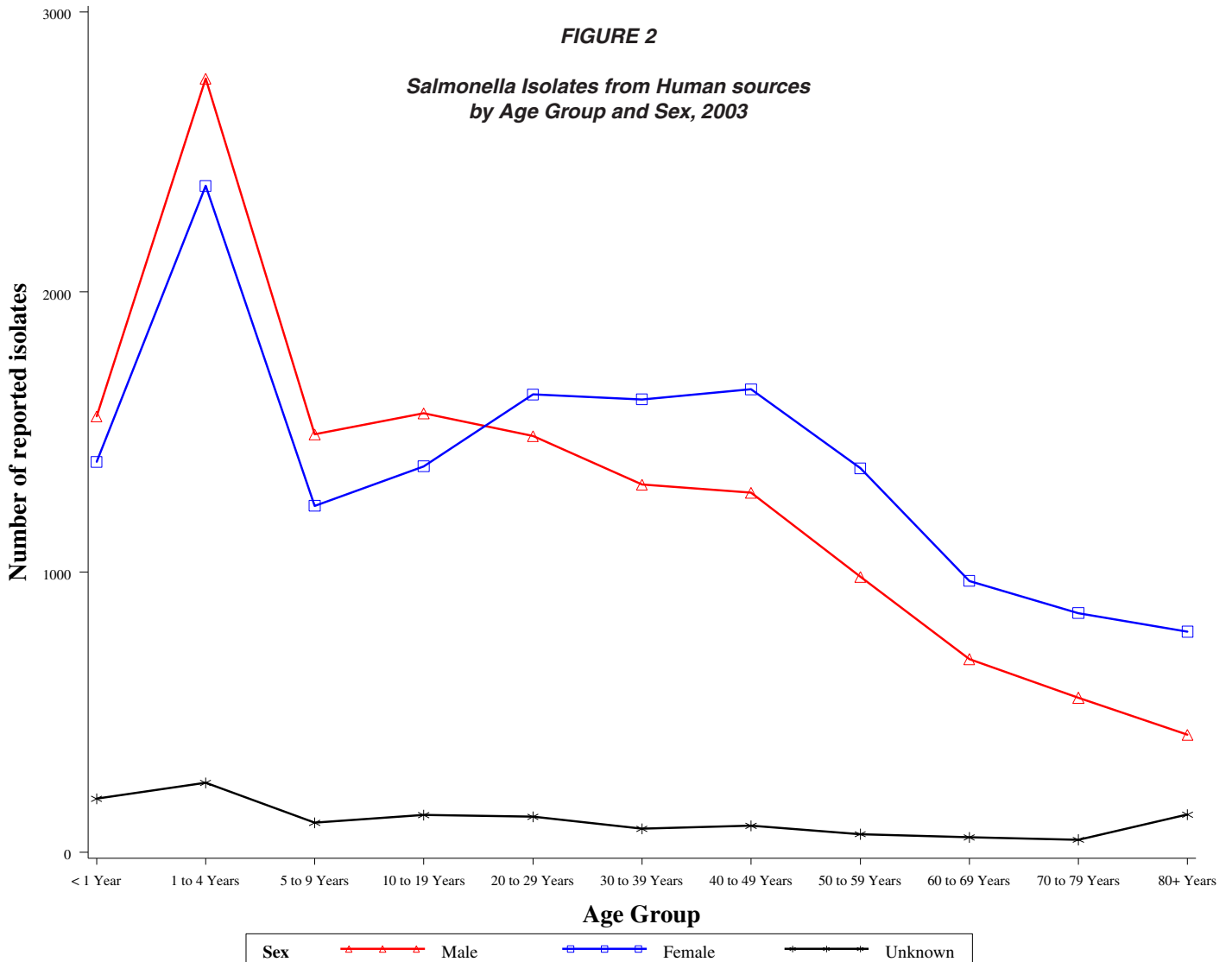


TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Aarhus	13	6		6	16	9	6	7	2	7	9	81
S. Aba								4			1	5
S. Abadina										2		2
S. Abaetetuba	2	10	10	17	8	7	7	5	4	3	1	74
S. Aberdeen	5	1	5	2	3	4	4	13	5	3	3	48
S. Abony	3	7	9	2	3	6	4	1	11	9	9	64
S. Abortusequi					1							1
S. Adelaide	74	110	98	88	70	72	95	42	81	66	58	854
S. Adime											1	1
S. Aequatoria					1		1					2
S. Aflao				1			1					2
S. Africana						2	6					8
S. Agama		4	3	2	2	2	2	1	1	5	4	26
S. Agbeni	1	3	5	1	3		1	13	5	4	7	43
S. Agege				1								1
S. Ago			1		1	1		1				4
S. Agodi										1		1
S. Agona	651	753	683	606	740	991	528	406	371	339	510	6578
S. Agoueve		2	2	4	3	6	2	2	3	6	2	32
S. Ahuza				1				2				3
S. Ajiobo	1				2	2		2		2	1	10
S. Alabama		1	1	2	2	2	4	1	1	3		17
S. Alachua	55	70	52	39	18	14	22	20	9	16	10	325
S. Alamo	2		1			1						4
S. Albany	30	29	49	26	21	23	17	18	17	15	17	262
S. Albert		2	1	1								4
S. Albuquerque	1									1		2
S. Allandale						1		1	1			3
S. Altona		1		1	1		1	4	3	3		14
S. Amager	2		6	1	8	3	4	7	1	2	3	37
S. Amsterdam	3	4	11	2	9	5	6	2	5	7	6	60
S. Amsterdam var. 15+	4	4	8	5	7	4	5	1	5	3		46
S. Anatum	194	146	174	271	208	138	157	177	188	214	170	2037
S. Anatum var. 15+	15	13	17	16	20	25	23	8	4	4	8	153
S. Anatum var. 15+, 34+	1			1						1		3
S. Anecho	2		2	5	2	2	2	1		5	2	23
S. Ank		1		2								3
S. Annedal				1					1			2
S. Antsalova		1	2	1		2		3		1		10
S. Apapa					2		2	4	8	10	3	29
S. Apeyeme							1	1				2
S. Aqua	1		3	2	1			2	1		1	11
S. Aragua				1	1	1		1				4
S. Arapahoe										1		1
S. Arechavaleta	1	4	6	6	9	4	3	9	3	6	3	54

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Assen							1	1		1		3
S. Assinie	1											1
S. Athinai						1						1
S. Augustenborg	1				2				1			4
S. Austin									1			1
S. Australia									3			3
S. Avignon		1										1
S. Avonmouth										1		1
S. Azteca	1						1					2
S. Babelsberg								1				1
S. Baguida	1											1
S. Baguirmi									1			1
S. Bahati				1								1
S. Bahrenfeld	1				1							2
S. Baidon	1	1	14	5	5	73	77	4	2	14	12	208
S. Ball				2					1			3
S. Banalia									1			1
S. Banana	1			1	1	1		1	1		2	8
S. Banco						2						2
S. Bardo	8	8	1	28	10	9	13	20	16	49	42	204
S. Bareilly	105	83	109	115	112	153	171	182	206	183	234	1653
S. Barranquilla				1			1		3	1	3	9
S. Bassa											1	1
S. Bassadji									1			1
S. Beaudesert								1			1	2
S. Belem							1				1	2
S. Benfica			2	1		1	1		1			6
S. Benin		1		1								2
S. Bere	1	2	1	1	8	1			1		1	16
S. Bergen							1	2			1	4
S. Berkeley						1						1
S. Berlin	1											1
S. Berta	401	399	367	118	87	123	143	311	333	298	197	2777
S. Birkenhead		2		2	7	4		2	2		4	23
S. Bispebjerg				1	1						1	3
S. Blegdam	6	6		2	4	3	1	2	2	3	2	31
S. Blijdorp				1							1	2
S. Blockley	89	76	55	51	62	61	54	28	33	38	66	613
S. Blukwa				1	1							2
S. Bochum						5	1		3		1	10
S. Bolton								1				1
S. Bonames								1			1	2
S. Bonariensis	6		5	3	3	6	4	3	5	6	3	44
S. Bonn		7	4	1		1		1	2			16
S. Borbeck			1					1				2

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Bournemouth										1	2	3
S. Bovismorbificans	35	40	25	41	47	64	35	54	83	73	69	566
S. Bracknell										1		1
S. Bradford	44	35	12	1	3	1		2	1	2	3	104
S. Braenderup	381	426	588	531	559	497	529	531	395	387	530	5354
S. Brancaster						1					1	2
S. Brandenburg	257	259	284	181	167	132	117	84	106	139	115	1841
S. Brazil	2		1	1	1		2				2	9
S. Brazos					1		1					2
S. Brazzaville											1	1
S. Breda	1											1
S. Bredeney	49	44	57	47	51	112	44	25	79	41	52	601
S. Brefet	1											1
S. Brezany		1							4	2	1	8
S. Brikama	1			1								2
S. Bristol					1							1
S. Bron		2	2	1					1			6
S. Bronx		1			2	2			1			6
S. Brooklyn						1					1	2
S. Broughton			2				1					3
S. Bsilla									1	1		2
S. Budapest	1		1									2
S. Bukavu					1			1			1	3
S. Burundi			1									1
S. Butantan							1			1		2
S. Butantan var. 15+								1				1
S. Buzu		1	3		5	4	1				1	15
S. Calabar						1	1					2
S. California	4	2	1	1	9	3	1		1		5	27
S. Camberwell						1						1
S. Canada				1				1		1	1	4
S. Cannstatt					1	1		1	1	3	1	8
S. Caracas					3		1			1		5
S. Carmel			1	1			1	1	8	9		21
S. Carno							1					1
S. Carrau	9	9	12	30	6	3	12	5	5	3	6	100
S. Cerro	57	62	74	55	60	52	56	52	31	39	25	563
S. Cerro var. 14+											3	3
S. Ceyco									1	1		2
S. Chailey	1		6	4	12	9	3	3		1	1	40
S. Champaign		1	1									2
S. Chandans		1								3		4
S. Charity	1							1				2
S. Charlottenburg				1								1
S. Chester	23	21	34	26	36	24	29	23	24	23	50	313

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Chicago	1	1				1				1	1	5
S. Chichiri									1		1	2
S. Chincol	2					1	2	2			1	8
S. Chingola					1				1			2
S. Choleraesuis	50	53	50	41	25	23	25	11	8	11	13	310
S. Choleraesuis var. Decatur	1	1				2			1	2		7
S. Choleraesuis var. Kunzendorf	36	18	25	26	24	13	9	9	5	8	6	179
S. Clackamas		1	1	1	3		3	1		6	4	20
S. Claibornei						1	1		1			3
S. Clerkenwell									1			1
S. Coeln	4	2	2	7	4	5	2	3	3	3	2	37
S. Colindale		5	2	7	1	4	2	3	2	5	8	39
S. Colorado	1	1	1	1	1	2	2				1	10
S. Concord		1	4	5	2	2	3		2	1	3	23
S. Corvallis	2		1	1	1	1	1	1		1	3	12
S. Cotham		1					2	1		3	6	13
S. Cremieu					1			2	1			4
S. Cubana	32	61	44	34	36	72	42	31	26	21	23	422
S. Cullingworth				1				1				2
S. Curacao	1	1					1	2	1			6
S. Dahomey											1	1
S. Dabra							2	1	1	1	1	6
S. Daytona	5	3	3	4	6	3	4	3	4	4	10	49
S. Denver	9	2	5	2	3	1	1	1	1	2	5	32
S. Derby	170	144	213	143	152	171	174	188	121	169	124	1769
S. Derkle								1				1
S. Dessau					1				1			2
S. Diguel				4	2	1				2	1	10
S. Diourbel								1				1
S. Djakarta	2											2
S. Djelfa							1					1
S. Djugu		4	1	2	2	1	1	1				12
S. Doba		1	1									2
S. Doel				2								2
S. Doncaster											1	1
S. Doulassame					1	1						2
S. Drogana		1	3									4
S. Dublin	90	65	81	85	61	78	66	94	76	83	64	843
S. Duesseldorf	19	12	13	6	6	15	5	1	2		6	85
S. Dugbe		1						1				2
S. Duisburg		1	5	3			1	1	2	2	2	17
S. Dunkwa									1			1
S. Durban	4	11	3	8	8	10	3	4	5	1	3	60
S. Durham	1	5	6	4	2		1	3	3	4	4	33
S. Duval	2		1		1	1				1		6

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Ealing	2	8	24	26	8	6	6	9	16	10	12	127
S. Eastbourne	8	13	10	13	3	8	7	10	6	18	18	114
S. Ebrie							1	3	2	1	1	8
S. Echa											1	1
S. Edinburg	1	3	4			1	6	2	1	5	20	43
S. Ekpoui	1							1		1		3
S. Elokate											1	1
S. Elomrane							2	1	1	1	1	6
S. Emek	4	3	6	5	7	7	8	5	2	2	10	59
S. Entebbe		2		8	4		1				1	16
S. Enteritidis	8071	9866	10201	9570	7924	6029	5343	6476	5634	5127	4863	79104
S. Enugu			1	1	1							3
S. Epicrates										1		1
S. Eppendorf	1	1					2	2				6
S. Escanaba					3					1		4
S. Essen		3		2	3	2	3	4	1		1	19
S. Etterbeek					1							1
S. Falkensee		1	2		1						1	5
S. Fallowfield					3							3
S. Fann										1		1
S. Farmsen		3	2	2	6	4	3		1	1	1	23
S. Farsta										4		4
S. Fayed			1				6	3	4		1	15
S. Ferruch											1	1
S. Finkenwerder							1					1
S. Fischerkietz						1	1					2
S. Fischerstrasse								1		1		2
S. Florida	5	3	2	7	11	8	1	2	4	2	3	48
S. Fluntern				1		3			2	2	5	13
S. Fortlamy			2									2
S. Freefalls			2									2
S. Freetown									1		5	6
S. Freiburg	1										1	2
S. Fresno		1	1						3	1		6
S. Friedenau					1					1	1	3
S. Frintrop				1								1
S. Fulica					1							1
S. Fyris				2		1						3
S. Gabon						1	1			1		3
S. Galiema											1	1
S. Galil			1		1				2			4
S. Gallinarum				2	1	1	1		1	3	2	11
S. Gamaba						1						1
S. Gambia			1		2							3
S. Gaminara	37	38	45	44	47	61	52	51	58	43	84	560

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Garba				1					1			2
S. Garoli	1											1
S. Gateshead	3											3
S. Gatow	1		1			2		1	1	1		7
S. Gatuni	6	3	1	2		1	1	1	3		2	20
S. Georgia		1	2			2			4	3	2	14
S. Gera											1	1
S. Give	101	95	101	114	118	92	97	86	75	55	86	1020
S. Give var. 15+	5	3	20	22	26	36	23	9	9	5	7	165
S. Give var. 15+, 34+		2	5	14	1					1		23
S. Glasgow									1			1
S. Glidji				1								1
S. Glostrup	42	13	31	13	5	10	7	6	6	2	2	137
S. Gloucester	2	3	2	2	2							11
S. Godesberg	1		1	1								3
S. Goeteborg					1							1
S. Goettingen	1				1	1	1	3		2	1	10
S. Goldcoast			1		1	1	1					4
S. Goma											1	1
S. Groenekan									1			1
S. Grumpensis	3	1	3			1	2	1	1		1	13
S. Guildford							1					1
S. Guinea				1								1
S. Gustavia								1	1			2
S. Haardt	13	10	16	6	5	2	3	4	4	3	52	118
S. Hadar	1298	1001	812	658	643	544	516	354	307	331	280	6744
S. Hadejia							1					1
S. Haelsingborg	1											1
S. Haifa	4	2	2	3	4	3	6	11	4	6	3	48
S. Halle							1					1
S. Handen				1								1
S. Harburg					1					1	1	3
S. Harleystreet						1						1
S. Hartford	100	90	164	89	110	175	140	150	158	198	188	1562
S. Hatfield					1		1				1	3
S. Hato		1	1				1	2	5	1	1	12
S. Havana	53	38	57	59	47	77	46	26	19	28	29	479
S. Hayindogo						1			1	1		3
S. Heerlen		1										1
S. Heidelberg	2457	1825	2095	1998	2104	1900	1816	1771	1895	1976	1810	21647
S. Heron					1							1
S. Herston	1								1	1	2	5
S. Hessarek											1	1
S. Hidalgo	1	1			1							3
S. Hiduddify		1				3	1	1		1	2	9

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Hillegersberg										1	1	2
S. Hillingdon				1								1
S. Hindmarsh	1		2	1	1	3		3	4	2	5	22
S. Holcomb				1	2		1		3	4	1	12
S. Homosassa				1		2						3
S. Horsham				2			3				1	6
S. Hull	1	1	3						1	1	2	9
S. Hvittingfoss	20	14	15	44	26	28	38	34	30	44	32	325
S. Ibadan	13	24	46	33	42	39	27	17	9	9	4	263
S. Idikan	6	2		11	4	1		2		1	1	28
S. Ilala					1							1
S. Ilugun				3								3
S. Imo				1								1
S. Inchpark		1					1					2
S. India				1								1
S. Indiana	18	25	24	28	11	7	14	9	13	24	42	215
S. Infantis	568	520	521	503	651	600	596	613	441	464	539	6016
S. Inganda								1	4		2	7
S. Inpraw											1	1
S. Inverness	20	21	37	20	26	32	24	22	23	30	29	284
S. Ipswich			1	1			1					3
S. Irchel			1									1
S. Ireneae							1				1	2
S. Irumu	39	45	31	18	13	15	6	6	9	2	9	193
S. Isangi		1	3	1	1	5	2		3	1	4	21
S. Israel											2	2
S. Istanbul	12	7	10	9	8	7	25	15	27	33	15	168
S. Isuge										1		1
S. Itami		1		1	2	8	7	12	50	3	8	92
S. Ituri	5	2	4	2	1	5	3	2	7	1		32
S. Jaffna	1	2										3
S. Jamaica	1	2	6		2	1	2					14
S. Jangwani	6	3	10	7	4	5	6	7	2	3		53
S. Javiana	641	540	758	749	675	1167	1197	1203	1068	1188	1659	10845
S. Jedburgh					1							1
S. Jerusalem									1	1	1	3
S. Joal				1						2	1	4
S. Jodhpur						1				1		2
S. Johannesburg	63	48	74	44	44	32	44	31	35	19	17	451
S. Jos							1					1
S. Jubilee					1							1
S. Kaapstad				1				1	1		2	5
S. Kaduna	1	1										2
S. Kalamu									1			1
S. Kalina									1			1

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Kambole						1					1	2
S. Kande									1	3		4
S. Kandla										1		1
S. Kanifing	3				1							4
S. Kaolack				1								1
S. Kedougou			4			1	2	3	1	1		12
S. Kentucky	46	42	80	78	60	58	71	48	64	68	59	674
S. Kiambu	7	6	14	17	14	13	40	24	27	40	83	285
S. Kibi	1											1
S. Kibusi				3								3
S. Kimuenza		2								1		3
S. Kingabwa	1	1	1		2		2		3	11	4	25
S. Kingston	1	1			3	1			2	1		9
S. Kinondoni				1	1	1	1			1		5
S. Kintambo	17	19	21	19	14	20	8	3	5	9	10	145
S. Kirkee					1		1					2
S. Kisangani			2									2
S. Kisarawe	1				2	2			1	2		8
S. Kitenge			1									1
S. Kivu							2					2
S. Kodjovi		1										1
S. Koessen				1								1
S. Koketime				1								1
S. Kokoli						1						1
S. Kokomlemle	2	2	2	2	3	1	1	2	4	2	1	22
S. Konstanz									2		1	3
S. Kottbus	27	22	49	9	11	2	5	15	73	19	7	239
S. Kpeme	1											1
S. Kralingen							1	1				2
S. Krefeld	9	3	3	2	1		1	1		2	1	23
S. Kristianstad								1	1			2
S. Kua	1	1	2	1	1	1	2	1	2		2	14
S. Kumasi		1										1
S. Kunduchi						1						1
S. Kuru		1										1
S. Labadi		1	2			1						4
S. Lagos	1	1	2	1	1				1	1	1	9
S. Lamberhurst						1		1				2
S. Lamin						1						1
S. Landau					1				1			2
S. Landwasser	1					1	2		1			5
S. Langensalza				1		1						2
S. Lansing	1						1					2
S. Larochelle	3	4	4	4	1	6	4	2		8	4	40
S. Lattenkamp									1			1

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Lawndale	1			1								2
S. Leeuwarden									2		1	3
S. Leopoldville									1			1
S. Lexington	5	3	1	2	1			1	5	1		19
S. Lexington var. 15+		1					1					2
S. Lexington var. 15+, 34+				1								1
S. Lika											4	4
S. Lille	3	1			3		1	1		1		10
S. Lille var. 14+								1				1
S. Limete				1	6	1			1			9
S. Lindenburg	11	6	9	5	3	10	5	7	3	2	3	64
S. Lindern										1		1
S. Lindi				1								1
S. Litchfield	116	93	115	158	105	119	135	118	140	125	165	1389
S. Liverpool	1		2	3	3		2	1			1	13
S. Livingstone	12	16	13	18	6	5	4	6	8	8	2	98
S. Livingstone var. 14+							1					1
S. Llandoff											1	1
S. Loanda	3				1			1	1		1	7
S. Lockleaze		3	2			1	1			1		8
S. Lomalinda	14	15	15	24	12	16	8	9	5	25	12	155
S. Lome	1	2		2	2				2		1	10
S. Lomita	5	1	2	5	3	3		2	4	2	6	33
S. London	14	15	36	23	33	28	41	26	24	22	42	304
S. London var. 15+	1	3	1	1	4	2	1					13
S. Losangeles				1								1
S. Loubomo									1			1
S. Louga											1	1
S. Lovelace		1				1						2
S. Lowestoft											1	1
S. Luciana		4		1	3	3	6	8	2	6	4	37
S. Luke		2										2
S. Madelia	3	5	8	21	7	12	12	16	3	4	5	96
S. Magwa					1	1						2
S. Maiduguri					1							1
S. Malstatt				2				1	1			4
S. Mampeza				1								1
S. Manchester							1	1	1		1	4
S. Mango							1					1
S. Manhattan	130	92	72	101	99	73	78	72	50	89	52	908
S. Mapo	1		1								1	3
S. Maracaibo										2		2
S. Marburg											1	1
S. Marshall								1				1
S. Maryland					1	1						2

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Massenya											1	1
S. Matadi	6	20	10	27	9	4	2	9	3	5	4	99
S. Matopeni						2			1			3
S. Mbandaka	167	118	154	223	189	147	231	156	163	169	167	1884
S. Meekatharra									1			1
S. Meleagridis	15	12	30	207	43	39	14	13	19	6	13	411
S. Meleagridis var. 15+			1				1					2
S. Memphis	2			1	1		1					5
S. Menden							1					1
S. Mendoza		1			1	3	1		2		1	9
S. Menston					1				2		2	5
S. Mgulani				2			2				1	5
S. Miami	98	126	74	52	76	99	95	81	68	130	66	965
S. Michigan		3	8	1		2	2	1	1		2	20
S. Mikawasima	2	1	7		2		4	6	3	5	4	34
S. Milwaukee									4			4
S. Minnesota	28	13	36	28	26	17	23	21	18	35	25	270
S. Mississippi	156	152	199	180	205	314	248	286	336	313	438	2827
S. Moero			2									2
S. Molade	1	1			1	1		4			2	10
S. Mono		1	1			2			2	4	2	12
S. Mons				2						1		3
S. Monschaui	8	9	9	11	10	3	5	5	7	5	13	85
S. Montevideo	789	631	685	1227	718	828	851	841	630	718	849	8767
S. Morehead	1	1	2									4
S. Morocco										1		1
S. Moscow				1		4			1			6
S. Moualine									1			1
S. Moundou							1					1
S. Mountpleasant			1		1	1			1		1	5
S. Mowanjum		1		2								3
S. Mpouto		1			1							2
S. Muenchen	657	559	754	595	543	639	1332	641	586	598	781	7685
S. Muenster	69	100	87	96	73	68	65	113	64	48	69	852
S. Muenster var. 15+			4	1	1	1			1	1	9	18
S. Muenster var. 15+, 34+					1	2	4	2		1		10
S. Mundonobo								1				1
S. Nagoya		1			1					1	1	4
S. Namibia				1								1
S. Napoli				1			2	2		1		6
S. Narashino	1		1	1	1							4
S. Nchanga						1		1			2	4
S. Ndolo	1								1			2
S. Nessziona					4			1	2			7
S. Neudorf	1											1

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Newlands				1								1
S. Newmexico	3	2			1			4	2	2	10	24
S. Newport	1487	1673	2566	1985	1584	2272	2618	3070	3168	4214	3847	28484
S. Newrochelle			2	1	1	1	1					6
S. Newyork				3	4		1					8
S. Ngili		1								2		3
S. Ngor							2					2
S. Nieukerk											1	1
S. Nigeria				1				1			1	3
S. Nikolaifleet									1			1
S. Nima		1	1	4	1	5	1	5	6	13	2	39
S. Nitra				3			1		1		2	7
S. Nola				1	1				1			3
S. Norwich	59	98	51	52	56	67	74	69	96	106	117	845
S. Nottingham	1	3	3	3	5	2		4	2	1	11	35
S. Nyanza										1		1
S. Nyborg											1	1
S. Oakland	3	4	1	4			1	1	1	1	3	19
S. Obogu											2	2
S. Ochiogu	1											1
S. Oerlikon		1										1
S. Offa	1											1
S. Ohio	132	101	105	67	100	79	77	85	64	57	49	916
S. Ohio var. 14+	1	2							1			4
S. Okatie	1		1	1							4	7
S. Oldenburg	1					1	1			1	1	5
S. Onderstepoort			1	2			1	2	1	2	2	11
S. Onireke		1	1									2
S. Ontario	2						1					3
S. Oranienburg	522	602	595	690	623	693	616	562	598	592	554	6647
S. Oranienburg var. 14+										2	11	13
S. Orientalis			2	6		1	2	5		1	8	25
S. Orion	3	1	1	6	3	1		3	3		5	26
S. Orion var. 15+	1	2	1			1	1		2	1		9
S. Orion var. 15+, 34+	1	2	1	1	2	2	4	2	1			16
S. Oritamerin								1	3	1		5
S. Oslo	19	14	13	31	25	31	28	20	23	19	21	244
S. Othmarschen		4	2	6	6	7	20	27	14	17	17	120
S. Ouakam	7	2	4						1		1	15
S. Oudwijk						1			1			2
S. Overschie	1		3	4	3	3	2	1	1	1	2	21
S. Oyonnax								1				1
S. Pakistan	1			2	4		6	3	5	5	4	30
S. Panama	173	163	173	148	144	119	132	158	162	151	182	1705
S. Papuana			1		1				1			3

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Paratyphi A	53	79	86	86	72	85	77	93	85	106	108	930
S. Paratyphi B	208	228	241	298	159	189	172	120	178	134	215	2142
S. Paratyphi B var. L(+) tartrate+	176	172	268	289	184	248	314	465	467	431	331	3345
S. Paratyphi C	1	2	2	1	1		1		1			9
S. Patience				1						1		2
S. Penarth								1	1			2
S. Pensacola	8	3	11	4	7	5	8	10	8	8	2	74
S. Pharr							1					1
S. Planckendael					1							1
S. Plymouth			1	1								2
S. Poano	2	6	2	5				1		8	9	33
S. Pomona	7	6	23	29	43	19	28	26	38	61	65	345
S. Pona	295	376	531	415	293	346	249	337	331	273	195	3641
S. Portland	2											2
S. Potsdam	8	6	5	3	10	6	9	2	6	4	9	68
S. Praha	1	3	1				1	1			1	8
S. Preston	1											1
S. Putten	1	1	8	6	5	9	3	2	9	4	12	60
S. Quebec						1						1
S. Quiniela		2			1	1						4
S. Ramatgan		1					1					2
S. Raus		1	2	3		3	3					12
S. Reading	363	257	197	131	167	81	97	95	53	81	90	1612
S. Rehovot									1		1	2
S. Redlands				1	1						1	3
S. Regent			2									2
S. Remo	2		1	2		1	2		3			11
S. Richmond	4	3	7	6	7	4	2	7	6	11	6	63
S. Ridge							1		3	1		5
S. Riggil									1			1
S. Riogrande			1				1					2
S. Rissen	6	10	4	5	9	6	6	10	3	7	7	73
S. Rittersbach										1	1	2
S. Romanby	1		5	5	4	1	6	5	1	1		29
S. Roodepoort					1	2	2	1	1	2	6	15
S. Rostock				1					2			3
S. Rottnest							1					1
S. Rubislaw	58	77	83	71	81	88	97	76	66	80	95	872
S. Ruiru							1		1			2
S. Ruzizi							1			1		2
S. Saarbruecken						1				1		2
S. Saboya						1						1
S. Saintpaul	380	479	467	562	436	479	472	548	471	544	823	5661
S. Salford								1				1
S. Sandiego	92	82	117	56	59	55	104	142	115	145	126	1093

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Sandow	1	2										3
S. Sangera		2	1							1		4
S. Sanjuan							2	3				5
S. Sanktgeorg									1			1
S. Santiago			1	1			1				2	5
S. Sao				1								1
S. Sapele										1		1
S. Saphra	1	6	11	11	41	16	13	14	11	3	12	139
S. Sarajane						1						1
S. Schleissheim		1	5	9	6	8	6	7	4	7	8	61
S. Schoeneberg					1				1			2
S. Schwarzengrund	169	167	162	157	144	123	155	113	104	99	179	1572
S. Schwerin				1								1
S. Sculcoates						1						1
S. Seefeld								1				1
S. Sekondi											1	1
S. Sendai	3		1			2	1	1		1		9
S. Senegal								1	2	1	1	5
S. Senftenberg	126	130	91	167	180	142	120	148	143	126	93	1466
S. Seremban	2			1	1			1	1	1		7
S. Serrekunda						1						1
S. Shamba					1							1
S. Shangani				1								1
S. Sharon			1									1
S. Sherbrooke								1				1
S. Shubra	3	3	9	2	3	4	7	5	3	7	3	49
S. Simi			2							1		3
S. Singapore	4	4	4	12	3	12	4	6	1	2	2	54
S. Sinstorf	2	1	9	4	8	1	3	3	7		2	40
S. Skansen			1			1						2
S. Soahanina	1	1	1		1			1				5
S. Soerenga	2	1		6	1		2	2	3	1	1	19
S. Somone	1	1		5	3	1	1		1	3		16
S. Soumbédioune		4										4
S. Southampton							1	1				2
S. Southbank				1								1
S. Stachus				1	3		2	1				7
S. Stanley	143	217	481	200	164	193	172	239	171	177	224	2381
S. Stanleyville	5	5	51	26	24	16	11	33	18	18	3	210
S. Stellingen		1	2		3	1					1	8
S. Stendal			1									1
S. Sterrenbos		1	1									2
S. Stockholm							4	2				6
S. Stoneferry											1	1
S. Stormont											1	1

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Strasbourg				1					1			2
S. Suberu					1	1					1	3
S. Suelldorf							1				2	3
S. Sundsvall	3	5	17	25	47	7	4	4	4	7	11	134
S. Sya								1				1
S. Szentes										1		1
S. Tafo							1					1
S. Takoradi	2		1	4	5	4	4			1	6	27
S. Taksony	2			5	1							8
S. Tallahassee	8	2	6	5	18	8	5	3	2	4	8	69
S. Tamale		1		2								3
S. Tambacounda	2		3		1	1	1	1				9
S. Tamberma	1											1
S. Tampico							2			1		3
S. Tananarive			1									1
S. Tanger			1						1		2	4
S. Teddington										1		1
S. Teko						1						1
S. Telaviv			1			1		1				3
S. Teitelkebir	5	8	4	13	12	26	15	14	10	11	21	139
S. Teltow											1	1
S. Tennessee	133	156	112	96	31	63	29	24	33	36	41	754
S. Texas				1								1
S. Thies							1					1
S. Thompson	576	549	625	586	695	571	602	607	514	441	494	6260
S. Tienba						1						1
S. Tilene		1	4	7	2		1	2		2	4	23
S. Tokoin			3					4			2	9
S. Toowong					1							1
S. Tornow									2		2	4
S. Toucra		2	3	3				1		2	2	13
S. Trachau					1						1	2
S. Travis					1		1		1			3
S. Treforest									2			2
S. Tsevie		1	1	1					2			5
S. Tshiongwe	2	3	2	4				2		2	2	17
S. Tucson	1	2	2	1	3		1			1		11
S. Typhi	472	507	442	440	349	382	352	399	344	292	359	4338
S. Typhimurium	8436	7972	9147	9002	8289	8100	7125	6498	6059	6281	5786	82695
S. Typhimurium var. 5-	307	393	555	499	827	718	926	932	979	828	845	7809
S. Typhisuis					3				1			4
S. Tyresoe				1								1
S. Uccle				1	4	4	1	2			2	14
S. Uganda	29	19	28	63	51	44	58	55	97	61	58	563
S. Uganda var. 15+		2	4	7	6	1	3	4	1	3	2	33

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Ughelli								1				1
S. Ullevi					1							1
S. Umhlali								1				1
S. Uppsala			1	1		1		1				4
S. Urbana	52	63	72	60	57	46	56	38	53	41	59	597
S. Uzaramo	1	1	5			3	1	2	1		3	17
S. Vancouver	1	3	1									5
S. Vejle			2		2	1	1		1	1	2	10
S. Vejle var. 15+											1	1
S. Veneziana									1			1
S. Victoria		3	1	3	2	1			1	1		12
S. Vietnam			1									1
S. Vilvoorde			1	2	1							4
S. Virchow	57	54	60	67	71	64	70	104	80	60	78	765
S. Virginia	2		7	7	2		10	1	5	4	3	41
S. Vitkin									1			1
S. Vridi			1									1
S. Wa				1			1					2
S. Wagenia								1			1	2
S. Wandsworth	1	5	14	6	5		9	12	3	5	6	66
S. Wangata	1	1	1		1	1		2		1		8
S. Waral		1	1		1					1	2	6
S. Warnow										2	1	3
S. Washington		1	2	1	3		1				1	9
S. Waycross	3	2		4	4	2	2	4	4	1	2	28
S. Wayne			2	1	1							4
S. Welikade		1			1	1	1		3	1		8
S. Weltevreden	98	86	89	86	106	67	54	59	89	65	68	867
S. Weltevreden var. 15+	1	3				1	1	1	3			10
S. Wentworth	1											1
S. Wernigerode						3			1			4
S. Weslaco		1	1			2	1				1	6
S. Westerstede							1					1
S. Westhampton	1	2	3	6	5	3	2		3	5	8	38
S. Westhampton var. 15+		3		1			2					6
S. Westhampton var. 15+, 34+	1											1
S. Weston											1	1
S. Westphalia		1										1
S. Wichita		1									1	2
S. Widemarsh				3	2		1			2	4	12
S. Wien	4	3	1				1	1	3			13
S. Wil				1			1					2
S. Willemstad	1		1		1							3
S. Winneba							1			1		2
S. Wippra		2										2

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. Wisbech				2								2
S. Woodinville											2	2
S. Worthington	41	44	50	58	48	38	28	28	29	27	15	406
S. Yarrabah				1								1
S. Yeerongpilly				1								1
S. Yehuda											1	1
S. Yoruba						1				1	1	3
S. Yovokome							1				1	2
S. Yundum										1		1
S. Zaiman			1					1				2
S. Zanzibar	1	3	2	2	2	1	1				2	14
S. I 3,10:e,h:-										2		2
S. I 3,10:l,v:-										1		1
S. I 3,15,34:l,v:-										1		1
S. I 4,12:-:1,7										1		1
S. I 4,[5],12:-:1,2										3	3	6
S. I 4,[5],12:b:-										10	14	24
S. I 4,[5],12:d:-										5		5
S. I 4,[5],12:e,h:-										1	2	3
S. I 4,[5],12:i:-						34	44	119	149	291	489	1126
S. I 4,[5],12:r:-										1	4	5
S. I 6,7:-:1,5										9	26	35
S. I 6,7:-:1,6											1	1
S. I 6,7:e,h:-										2	1	3
S. I 6,7:k:-										2	4	6
S. I 6,7:l,w:-										1		1
S. I 6,7:z4,z23:-										1		1
S. I 6,8:-:1,2											1	1
S. I 6,8:-:1,5										1		1
S. I 6,8:d:-										3	1	4
S. I 6,8:e,h:-											2	2
S. I 6,8:z10:-										1		1
S. I 9,12:-:1,5										4	1	5
S. I 9,12:a:-										1		1
S. I 9,12:l,v:-										3	1	4
S. I 9,12:l,z28:-										11	13	24
S. I 13,22:b:-										2		2
S. I 13,23:i:-										1		1
S. II 3,10:g,t:-		1										1
S. II 3,10:m,t,e,n,x		1										1
S. II 4,12,[27]:b:[e,n,x]						1						1
S. II 4,12,[27]:e,n,x:1,[5],7		1										1
S. II 4,12,[27]:z:e,n,x							1					1
S. II 4,12:l,w,e,n,x		11	4	2		1	3	4				25
S. II 6,7:l,z28:1,5:[z42]	1					1						2

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. II 6,7:z39:1,5,7											1	1
S. II 9,12:d:e,n,x											1	1
S. II 9,12:g,m,[s],t:[1,5,7]:[z42]			4		1		1		5	1	2	14
S. II 9,12:g,s,t:e,n,x										1		1
S. II 9,12:z39:1,7								2				2
S. II 9,46:g,[m],[s],t:[e,n,x]								1				1
S. II 9,46:z4,z24:z39:z42	1											1
S. II 11:g,[m],s,t:z39										1		1
S. II 11:m,t:e,n,x								1				1
S. II 13,22:g,m,t:[1,5]	1		1		1							3
S. II 13,22:z29:1,5										1	3	4
S. II 13,23:a:z42	1		2	1								4
S. II 13,23:b:[1,5]:z42				1								1
S. II 13,23:g,m,[s],t:[e,n,x]							1			1		2
S. II 13,23:z:1,5				1				1				2
S. II 16:l,w:z6			1									1
S. II 16:z4,z23:-			1									1
S. II 17:g,t:[e,n,x,z15]								1		1		2
S. II 21:z10:[z6]								1	2			3
S. II 35:g,m,s,t:-										1		1
S. II 35:z29:e,n,x											1	1
S. II 40:c:e,n,x,z15								1				1
S. II 40:z4,z24:z39			1				1					2
S. II 41:z10:1,2		1	1									2
S. II 41:z10:z6							1			1		2
S. II 42:b:e,n,x,z15				1						1		2
S. II 42:g,t:-			1									1
S. II 47:b:1,5	8	3	9	9	5	4	6	6	2		1	53
S. II 47:d:z39			3					2		4		9
S. II 48:a:z6										2		2
S. II 48:b:z6											1	1
S. II 48:d:z6			1	1	1		1	3		3		10
S. II 48:g,m,t:-							1					1
S. II 48:k:z39						1				1		2
S. II 50:b:z6						3			1	4	4	12
S. II 60:g,m,t:z6				1								1
S. IIIa 17:z4,z23:-										1		1
S. IIIa 18:z4,z23:-										1	2	3
S. IIIa 18:z4,z32:-				1							2	3
S. IIIa 21:g,z51:-										1		1
S. IIIa 41:z4,z23:-										4	1	5
S. IIIa 45:z4,z24:-										1		1
S. IIIa 48:g,z51:-							3	3	2	7	4	19
S. IIIa 48:z4,z23:-										1		1
S. IIIa 48:z4,z24:-											2	2

TABLE 3

**Salmonella isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. IIIa 51:z4,z23:-										1		1
S. IIIa 51:z4,z24:-											1	1
S. IIIa 53:z4,z23,z32:-							4	2				6
S. IIIa 62:z4,z23:-										1		1
S. IIIb 16:z10:e,n,x,z15										2		2
S. IIIb 17:z10:e,n,x,z15										1		1
S. IIIb 38:(k):z35								1		1	2	4
S. IIIb 38:l,v,z53								1	1			2
S. IIIb 47:k:z35										2		2
S. IIIb 48:i:z			1	4	1		1	3	1	1	1	13
S. IIIb 48:z52:z											1	1
S. IIIb 50:k:z										3	3	6
S. IIIb 50:k:z53										1		1
S. IIIb 50:r:z										2		2
S. IIIb 50:z52:z35											1	1
S. IIIb 50:z:z52										1	1	2
S. IIIb 60:r:e,n,x,z15										1	4	5
S. IIIb 60:r:z										1	2	3
S. IIIb 61:-:1,5,[7]											1	1
S. IIIb 61:c:-											1	1
S. IIIb 61:c:z35										1	2	3
S. IIIb 61:i:z			1							1	1	3
S. IIIb 61:k:1,5,(7)							3		1		1	5
S. IIIb 61:l,[v],[z13]:-										1		1
S. IIIb 61:l,[v],[z13]:1,5,[7]						1	2			16	2	21
S. IIIb 61:l,[v],[z13]:z35											3	3
S. IIIb 61:r:z53										1	1	2
S. IIIb 61:z52:z53											1	1
S. IIIb 65:(k):z							1					1
S. IV 6,7:z4,z23:-	1	1	1	2		1		2	1			9
S. IV 6,7:z4,z24:-	5	3	10	15	4	14	3	14	6	8	8	90
S. IV 11:z4,z23:-	2	4	7	7	2	4	2		2	1	1	32
S. IV 16:z4,z23:-		1			2							3
S. IV 16:z4,z32:-	9	9	12	11	7	8	5	12	19	11	3	106
S. IV 21:g,z51:-										1		1
S. IV 21:z4,z23:-	1							1				2
S. IV 40:g,z51:-			1									1
S. IV 40:z4,z32:-							2	2				4
S. IV 43:z36,z38:-	1	1		2				1				5
S. IV 43:z4,z23:-	3	7	3	21	1	6	10	2	5		3	61
S. IV 43:z4,z32:-	2		1	1	2	1				2		9
S. IV 44:z36,[z38]:-										4	2	6
S. IV 44:z4,z23:-					4	6	14	3	3	12	10	52
S. IV 44:z4,z32:-			2	4			2	1		2		11
S. IV 45:g,z51:-						2	1	2	2	1	7	15

TABLE 3

***Salmonella* isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
S. IV 48:g,z51:-	30	53	75	81	36	47	44	46	45	38	20	515
S. IV 48:z4,z23:-											2	2
S. IV 48:z4,z32:-											1	1
S. IV 50:g,z51:-	16	19	28	18	14	6	11	6	14	21	7	160
S. IV 50:z4,z23:-	30	32	39	34	43	55	64	57	13	6	5	378
S. IV 50:z4,z32:-	1		1	1			1					4
<i>S. bongori</i> ser. 48:z35:-		1	2	1				1				5
Partially serotyped isolates	1286	1482	1374	1367	1036	1051	1056	1223	1504	1225	1351	13955
Rough or nonmotile isolates										44	19	63
Unknown	1649	1468	952	673	382	515	404	665	591	454	735	8488
Total	36917	37501	41222	39035	34608	33971	32828	33556	31876	32579	33589	387682

TABLE 3a

***Salmonella* partially serotyped isolates from Human sources
by Serotype and Year, 1993-2003**

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Group 51				1	1	2	1		2			7
Group 52				2								2
Group 53		2	1	5	3	2	2	2	2	1		20
Group 54			1									1
Group 56				3	1			1	1			6
Group 57						1						1
Group 58	3		3		3	2	1	2	2		1	17
Group 59	1	2			1							4
Group 60		3	2	6	3	2	2	2	4			24
Group 62							1					1
Group 63							1					1
Group 65		1	2	2	6			1	1	1		14
Group F	2	6	3	5	2	6		2	47	7	2	82
Group G	22	34	73	42	8	17	18	20	31	22	1	288
Group H	3	2	2	4		2	2	6		5	2	28
Group I	2	10	5	6	5	44	46	6	7	2	6	139
Group J	2		1	1			1		9	2	1	17
Group K	1	2	3	5	2	4	4	4	4	4	4	37
Group L		3	2		1	1		1	2	1		11
Group M					2				1	3		6
Group N	1			1		1			1	2		6
Group O		3	2	3	2	1	4	1	6	6		28
Group P	11	4	4	1	4	1		3	2	3	1	34
Group Q			1		1	1	2		1			6
Group R	2	1	2	3		3	1	10	7	3	1	33
Group S	3	5	5	5	5	1	1	4	6		1	36
Group T				1	1							2
Group U	2	2	3	4	1			2	1			15
Group V	1	6	15	26	33	9	7	7	12	10	7	133
Group W	13	24	15	21	10	3	3	2	6	4	2	103
Group X	1	1	1	10	9	2	4	1	1		1	31
Group Y	15	14	15	15	11	4	15	12	22	12	8	143
Group Z	16	18	18	16	13	6	14	20	104	72	5	302
Subspecies I	2	23	26	32	22	72	81	100	68	58	176	660
Subspecies I, Group A	1	7	4	3	1	2	4		2	2	1	27
Subspecies I, Group B	539	559	601	582	507	532	465	615	540	553	417	5910
Subspecies I, Group C1	110	137	108	123	103	85	142	96	120	100	120	1244
Subspecies I, Group C2	163	200	111	108	64	51	49	43	109	85	178	1161
Subspecies I, Group D1	280	254	182	186	116	113	85	103	208	131	227	1885
Subspecies I, Group D2			1	3	2	1	1	1	1	1	1	12
Subspecies I, Group E1	7	21	20	23	17	16	18	48	63	24	37	294
Subspecies I, Group E4	2	3	2	3	2	3	2	1	1		10	29
Subspecies I, Group O:30										1		1
Subspecies II	10	9	7	22	8	5	6	8	11	5	9	100
Subspecies II, Group D3						2		3				5

TABLE 3a

***Salmonella partially serotyped isolates from Human sources
by Serotype and Year, 1993-2003***

Serotype	Year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Subspecies IIIa	5	21	20	11	7	12	16	14	16	13	32	167
Subspecies IIIa, Group O:13											1	1
Subspecies IIIa, Group O:63										1		1
Subspecies IIIa/IIIb	33	60	38	31	21	13	17	32	35	37	26	343
Subspecies IIIb	19	21	26	13	10	7	9	21	13	24	36	199
Subspecies IIIb, Group O:35											1	1
Subspecies IIIb, Group O:38											1	1
Subspecies IIIb, Group O:47											1	1
Subspecies IIIb, Group O:57										1		1
Subspecies IIIb, Group O:61	9	11	17	17	6	5	5	4	10	2	1	87
Subspecies IV	5	13	31	21	22	17	26	24	25	26	33	243
Subspecies IV, Group O:11										1		1
Subspecies VI			1	1				1				3
Total	1286	1482	1374	1367	1036	1051	1056	1223	1504	1225	1351	13955

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=New England

Serotype	State						Total
	Connecticut	Maine	Massachusetts	New Hampshire	Rhode Island	Vermont	
S. Aberdeen			1				1
S. Abony				2			2
S. Adelaide			2				2
S. Agona	6		18	3	3	1	31
S. Alachua			1				1
S. Albany				1			1
S. Anatum	2		3	4			9
S. Anatum var. 15+			1				1
S. Arechavaleta	1						1
S. Baildon	1					1	2
S. Bareilly	2		4				6
S. Bergen					1		1
S. Berta	5		13				18
S. Blockley			7		2		9
S. Bonariensis			1				1
S. Bovismorbificans	1		2				3
S. Braenderup	9	3	20	1	2		35
S. Brandenburg			2	1			3
S. Bredeney			1				1
S. Cerro						1	1
S. Choleraesuis var. Kunzendorf	2		1				3
S. Colindale	1						1
S. Corvallis			1				1
S. Derby			2		1		3
S. Dublin	2			2			4
S. Duesseldorf			1				1
S. Ealing				1			1
S. Eastbourne			1				1
S. Edinburg	1		1	1			3
S. Enteritidis	76	15	191	40	26	7	355
S. Freetown	1		1				2
S. Gaminara	1						1
S. Give			1				1
S. Goma					1		1
S. Hadar	5		20	2	5		32
S. Hartford	2		10	1		1	14
S. Heidelberg	29	1	83	5	8	3	129
S. Hvittingfoss	1		2	1			4
S. Idikan			1				1
S. Infantis	3	1	20	3	2		29
S. Irumu			1				1
S. Javiana	7		23	7	4	1	42
S. Kentucky			1				1
S. Kiambu					1		1
S. Kintambo	1				1		2

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=New England

Serotype	State						Total
	Connecticut	Maine	Massachusetts	New Hampshire	Rhode Island	Vermont	
S. Litchfield	3		5		3		11
S. Lomalinda			2				2
S. London	1			2			3
S. Madelia					1		1
S. Manhattan	3		3				6
S. Marburg					1		1
S. Mbandaka	3		7	1			11
S. Miami	1		5	2			8
S. Mississippi	3		2	1			6
S. Montevideo	4		26	4	1	2	37
S. Muenchen	13	8	34	5	1		61
S. Muenster	2		3		1		6
S. Muenster var. 15+			7				7
S. Nagoya	1						1
S. Newport	40	15	124	18	6	7	210
S. Norwich	1		1				2
S. Nottingham			3				3
S. Ohio			2			1	3
S. Onderstepoort				1			1
S. Oranienburg	6		24	7	7		44
S. Oslo			1				1
S. Pakistan	1						1
S. Panama	8		2				10
S. Paratyphi A	2		4	1			7
S. Paratyphi B	3		3	1			7
S. Paratyphi B var. L(+) tartrate+	2		12		1		15
S. Pomona			8				8
S. Poona	8		7				15
S. Potsdam			1				1
S. Putten			2				2
S. Reading			4				4
S. Richmond					1		1
S. Rubislaw	1						1
S. Saintpaul	13		42	1	1	1	58
S. San Diego	2		5		2		9
S. Schwarzengrund	2		12	1		1	16
S. Senftenberg	1		3				4
S. Stanley			11		4		15
S. Stellingen	1						1
S. Takoradi						1	1
S. Teitelkebir			1	1			2
S. Teltow			1				1
S. Tennessee	1						1
S. Thompson	7	2	22	3	8		42
S. Tilene			1				1

TABLE 4

***Salmonella* isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=New England

Serotype	State						Total
	Connecticut	Maine	Massachusetts	New Hampshire	Rhode Island	Vermont	
S. Typhi	8		14	1	2		25
S. Typhimurium	87	31	172	14	34	11	349
S. Typhimurium var. 5-		12	91	10	1		114
S. Uganda			1		2		3
S. Urbana	1		3				4
S. Virchow	2		4	1	1		8
S. Wagenia			1				1
S. Wandsworth	1						1
S. Weltevreden			2				2
S. I 4,[5],12:i-	13		43	7	1	1	65
S. I 4,[5],12:r-	2						2
S. IIIb 48:z52:z			1				1
S. IIIb 60:r:e,n,x,z15	1						1
S. IIIb 60:r:z			1				1
S. IIIb 61:-:1,5,[7]	1						1
S. IIIb 61:z52:z53	1						1
S. IV 6,7:z4,z24:-	1						1
S. IV 43:z4,z23:-	1						1
S. IV 44:z4,z23:-	2						2
S. IV 48:g,z51:-	1		1				2
S. IV 48:z4,z32:-	1						1
S. IV 50:z4,z23:-			1				1
Partially serotyped isolates	1		26		1	2	30
Rough or nonmotile isolates	4						4
Unknown	7			3	5	2	17
Total	427	88	1188	160	142	44	2049

TABLE 4

***Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003***

Region=Mid Atlantic

Serotype	States			Total
	New Jersey	New York	Pennsylvania	
S. Aarhus		1		1
S. Aba		1		1
S. Aberdeen	1			1
S. Abony		2		2
S. Adelaide	1	9	2	12
S. Adime		1		1
S. Agama		2		2
S. Agona	9	68	28	105
S. Alachua		1	1	2
S. Anatum	2	15	4	21
S. Anatum var. 15+	1			1
S. Baildon		1	1	2
S. Bardo		2		2
S. Bareilly	5	6	2	13
S. Barranquilla			1	1
S. Berta	4	8	8	20
S. Birkenhead		1		1
S. Bispebjerg		1		1
S. Blockley	5	16	3	24
S. Bonames		1		1
S. Bourmemouth	1			1
S. Bovismorbificans		3	6	9
S. Braenderup	6	35	26	67
S. Brandenburg		12	2	14
S. Brazzaville		1		1
S. Bredeney	1	2	4	7
S. Brezany		1		1
S. Canada		1		1
S. Cerro		1	2	3
S. Chester	1	1		2
S. Choleraesuis		4		4
S. Coeln			1	1
S. Concord		2		2
S. Cubana		5	5	10
S. Dahomey			1	1
S. Daytona		1		1
S. Denver		1		1
S. Derby	1	8	6	15
S. Dublin		11		11
S. Duesseldorf	2			2
S. Duisburg		1	1	2
S. Durban	2	1		3
S. Durham		3		3
S. Ealing		1		1
S. Eastbourne		1		1

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Mid Atlantic

Serotype	States			Total
	New Jersey	New York	Pennsylvania	
S. Ebrie		1		1
S. Edinburg		2	1	3
S. Entebbe		1		1
S. Enteritidis	102	620	377	1099
S. Ferruch	1			1
S. Freetown	1	1		2
S. Gaminara	1	6		7
S. Gatuni		1		1
S. Give		8	2	10
S. Glostrup		1		1
S. Grumpensis		1		1
S. Haardt		42	3	45
S. Hadar	8	54	18	80
S. Haifa		1		1
S. Hartford	3	11	4	18
S. Hato			1	1
S. Havana	2		1	3
S. Heidelberg	46	242	89	377
S. Holcomb		1		1
S. Hvittingfoss		3	1	4
S. Indiana		4	5	9
S. Infantis	8	42	26	76
S. Inganda		1		1
S. Inverness		1		1
S. Irenea			1	1
S. Isangi	1			1
S. Israel	1		1	2
S. Istanbul		10		10
S. Javiana	11	21	20	52
S. Jerusalem		1		1
S. Johannesburg	1	2	2	5
S. Kentucky	2	11	1	14
S. Kiambu		4	2	6
S. Konstanz	1			1
S. Litchfield	2	19	22	43
S. Livingstone		1		1
S. Lomalinda			1	1
S. London	1	1	1	3
S. Manhattan	3	7	6	16
S. Massenia		1		1
S. Mbandaka	2	12	18	32
S. Meleagridis		1		1
S. Miami		4	3	7
S. Mikawasima			2	2
S. Minnesota		4		4

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Mid Atlantic

Serotype	States			Total
	New Jersey	New York	Pennsylvania	
S. Mississippi		5		5
S. Monschaui			3	3
S. Montevideo	5	64	47	116
S. Muenchen	10	55	31	96
S. Muenster	2	3	12	17
S. Newport	48	235	121	404
S. Nitra		1		1
S. Norwich	1	1		2
S. Nottingham		7		7
S. Oakland		1		1
S. Ohio	2	9	2	13
S. Oranienburg	10	17	38	65
S. Orion		1		1
S. Oslo	1	1		2
S. Othmarschen		10		10
S. Panama	6	21	4	31
S. Paratyphi A	2	9	3	14
S. Paratyphi B	5	29	13	47
S. Paratyphi B var. L(+) tartrate+	4		22	26
S. Poano	1			1
S. Pomona		22		22
S. Poona	6	27	10	43
S. Potsdam		3	1	4
S. Praha	1			1
S. Putten		1		1
S. Reading	2	11	3	16
S. Richmond			3	3
S. Roodepoort		2	1	3
S. Rubislaw		3		3
S. Saintpaul	18	46	46	110
S. San Diego	13	20	13	46
S. Schwarzengrund	5	25	9	39
S. Senftenberg	2	5	3	10
S. Sinstorf			1	1
S. Stanley		20	10	30
S. Stanleyville		1	1	2
S. Tanger		2		2
S. Teitelkebir		6	1	7
S. Tennessee		7	1	8
S. Thompson	9	53	18	80
S. Tilene		1		1
S. Tokoin		1	1	2
S. Typhi	16	88	9	113
S. Typhimurium	55	511	442	1008
S. Typhimurium var. 5-	54			54

TABLE 4

***Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003***

Region=Mid Atlantic

Serotype	States			Total
	New Jersey	New York	Pennsylvania	
S. Uccle	1			1
S. Uganda	1	9	1	11
S. Urbana		14	8	22
S. Virchow	2	10		12
S. Waral			1	1
S. Warnow		1		1
S. Weltevreden		3		3
S. Weston		1		1
S. Worthington		3	1	4
S. I 4,[5],12:-:1,2		2		2
S. I 4,[5],12:b:-		13		13
S. I 4,[5],12:i:-		47		47
S. I 6,7:-:1,5		16		16
S. I 6,8:e,h:-		1		1
S. I 9,12:l,z28:-		3		3
S. II 9,12:g,m,[s],t:[1,5,7]:[z42]		1		1
S. II 50:b:z6		1		1
S. IV 48:g,z51:-			6	6
S. IV 50:z4,z23:-		1	2	3
Partially serotyped isolates	23	49	32	104
Unknown		24	12	36
Total	544	2898	1644	5086

TABLE 4

***Salmonella* isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East North Central

Serotype	States					Total
	Illinois	Indiana	Michigan	Ohio	Wisconsin	
S. Abony		2				2
S. Adelaide	5	2	1	2		10
S. Agbeni				4		4
S. Agona	16	4	13	13	75	121
S. Agoueve					1	1
S. Alachua	1				1	2
S. Albany					1	1
S. Anatum	14	4	3	7	3	31
S. Anatum var. 15+	1					1
S. Baildon	2	1				3
S. Banana			1			1
S. Bareilly	1	3	1	3	3	11
S. Bassa					1	1
S. Berta	22	7	8	4	2	43
S. Blijdorp					1	1
S. Blockley	2	1	1	2		6
S. Bovismorbificans	7	8		4	3	22
S. Braenderup	38	10	11	32	14	105
S. Brandenburg	15	1	2	5	3	26
S. Bredeney	4	1	2	1	1	9
S. Carrau				1		1
S. Cerro	1	1		1	1	4
S. Chester	2	1	1			4
S. Chicago					1	1
S. Choleraesuis	3					3
S. Choleraesuis var. Kunzendorf				2		2
S. Colindale			1			1
S. Cotham		1				1
S. Cubana			1	3		4
S. Daytona			1			1
S. Derby	5	3	4	5	5	22
S. Dublin			3	4	4	11
S. Durham			1			1
S. Ealing			1			1
S. Eastbourne				2		2
S. Edinburg	1	2			2	5
S. Emek	3		3			6
S. Enteritidis	226	82	141	265	122	836
S. Farmsen					1	1
S. Freiburg					1	1
S. Gaminara	2		2	2		6
S. Georgia				1		1
S. Give	2	1		9		12
S. Give var. 15+				1	2	3
S. Glostrup		1				1

TABLE 4

***Salmonella* isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East North Central

Serotype	States					Total
	Illinois	Indiana	Michigan	Ohio	Wisconsin	
S. Hadar	20	2	13	9	3	47
S. Hartford	8	4	10	32	7	61
S. Havana	1	1	4	2		8
S. Heidelberg	127	42	63	63	13	308
S. Hindmarsh					2	2
S. Hull			1			1
S. Hvittingfoss				1		1
S. Indiana		4	3	4	1	12
S. Infantis	169	9	14	9	5	206
S. Irumu	2					2
S. Isangi		1		1		2
S. Javiana	287	9	9	18	17	340
S. Kaapstad				1		1
S. Kentucky	6	1	3	1		11
S. Kiambu	1		2	2		5
S. Kingabwa		1	1			2
S. Kintambo				2		2
S. Kokomlele				1		1
S. Lindenburg					1	1
S. Litchfield	18	3	4	10		35
S. Llandoff					1	1
S. Lomalinda				1		1
S. London	5		1	1	6	13
S. Madelia			1			1
S. Manhattan	1			1		2
S. Matadi	2					2
S. Mbandaka	6	2	8	2	2	20
S. Meleagridis	1		1		1	3
S. Miami	4	4	3	2		13
S. Minnesota		1	2	2		5
S. Mississippi		1	1	7		9
S. Molade	1					1
S. Monschau	1			2		3
S. Montevideo	28	5	11	34	19	97
S. Muenchen	47	19	16	18	5	105
S. Muenster	1	2	3	3	2	11
S. Nchanga		1				1
S. Newmexico			4			4
S. Newport	176	43	76	108	102	505
S. Norwich	3		1	2		6
S. Ohio	7	1		3		11
S. Oranienburg	33	13	23	43	8	120
S. Oranienburg var. 14+					1	1
S. Orion	1					1
S. Oslo	2			1		3

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East North Central

Serotype	States					Total
	Illinois	Indiana	Michigan	Ohio	Wisconsin	
S. Othmarschen					3	3
S. Panama	3	2	4			9
S. Paratyphi A	10	1	1			12
S. Paratyphi B	21	1	18	2	1	43
S. Paratyphi B var. L(+) tartrate+		22	1	47	17	87
S. Poano		1	1	1		3
S. Pomona	4		1	2	1	8
S. Poona	6	4	6	5	7	28
S. Putten				1		1
S. Reading	10	1	1	3	2	17
S. Rissen			1			1
S. Rubislaw	3		2	1	1	7
S. Saintpaul	31	10	26	27	4	98
S. Sandiego	5	1	7	6	1	20
S. Schwarzengrund	12	9	4	4	1	30
S. Senftenberg	2	1	1	3		7
S. Shubra				1		1
S. Stanley	13	11	1	7	5	37
S. Stoneferry				1		1
S. Sundsvall				1		1
S. Takoradi	1				1	2
S. Tallahassee				1	1	2
S. Teitelkebir	2		1			3
S. Tennessee	10	1	1	2		14
S. Thompson	29	6	18	59	8	120
S. Typhi	21	4	10	7		42
S. Typhimurium	397	87	131	264	98	977
S. Typhimurium var. 5-		29		2	13	44
S. Uganda	4		2		4	10
S. Uganda var. 15+				1		1
S. Urbana			1	2	1	4
S. Uzaramo				1		1
S. Virchow	10		1	1	2	14
S. Washington			1			1
S. Weltevreden	2	1		3		6
S. Westhampton		1			1	2
S. Widemarsh		1			1	2
S. Woodinville				1		1
S. Worthington	1			1		2
S. I 4,[5],12:-:1,2		1				1
S. I 4,[5],12:i:-	84	9		22		115
S. I 6,8:-:1,2				1		1
S. II 9,12:d:e,n,x				1		1
S. II 9,12:g,m,[s],t:[1,5,7]:[z42]			1			1
S. II 50:b:z6				1		1

TABLE 4

***Salmonella* isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East North Central

Serotype	States					Total
	Illinois	Indiana	Michigan	Ohio	Wisconsin	
S. IIIb 50:k:z		1		2		3
S. IIIb 50:z:z52				1		1
S. IIIb 60:r:e,n,x,z15				1		1
S. IIIb 60:r:z		1				1
S. IIIb 61:c:z35				1		1
S. IIIb 61:l,[v],[z13]:1,5,[7]				1		1
S. IIIb 61:l,[v],[z13]:z35				3		3
S. IIIb 61:r:z53				1		1
S. IV 6,7:z4,z24:-			1			1
S. IV 11:z4,z23:-				1		1
S. IV 44:z36,[z38]:-		1				1
S. IV 44:z4,z23:-		1		3		4
S. IV 45:g,z51:-		1		2		3
S. IV 48:g,z51:-	3	2		2		7
S. IV 50:g,z51:-		1		2	1	4
S. IV 50:z4,z23:-		1				1
Partially serotyped isolates	3	12	52	17	3	87
Rough or nonmotile isolates				5		5
Unknown	39	2	53	27	34	155
Total	2057	532	828	1310	655	5382

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=West North Central

Serotype	States							Total
	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	
S. Abony	1							1
S. Adelaide			3	2				5
S. Agona	5	5	9	11	4			34
S. Ajiobo			1					1
S. Albany	1		1					2
S. Anatum	2	3	11	4			1	21
S. Anecho				1				1
S. Apapa	1							1
S. Baildon				2				2
S. Banana			1					1
S. Bardo	1	1	1					3
S. Bareilly	3	2	1	19	3			28
S. Berta	4	2	3	4			1	14
S. Blockley	1		1				1	3
S. Bonariensis	1							1
S. Bovismorbificans		3		7				10
S. Bradford		1						1
S. Braenderup	10	12	5	9	1		3	40
S. Brandenburg		2		2	1			5
S. Bredeney	3	3	1	3	1		1	12
S. Bukavu				1				1
S. Chester	1		2	3				6
S. Chincol	1							1
S. Choleraesuis				1				1
S. Choleraesuis var. Kunzendorf			1					1
S. Daytona				2				2
S. Derby	7		7	2				16
S. Doncaster	1							1
S. Duesseldorf			1					1
S. Ealing			4	1				5
S. Eastbourne	1			1				2
S. Edinburg			2				1	3
S. Emek	2							2
S. Enteritidis	35	17	123	78	20	7	17	297
S. Gaminara						1		1
S. Give var. 15+			1					1
S. Hadar	6		5	1	2	1	8	23
S. Haifa	1				1			2
S. Hartford	2	1	6	6				15
S. Havana	2		2	1				5
S. Heidelberg	19	7	70	36	12	5	6	155
S. Hull			1					1
S. Hvittingfoss	1	1		1			1	4
S. Ibadan						1		1
S. Indiana		1	2	1				4

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=West North Central

Serotype	States							Total
	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	
S. Infantis	8	4	6	11			2	31
S. Inverness			1					1
S. Javiana	8	10	9	41	5	2		75
S. Johannesburg			1					1
S. Kentucky			4	1				5
S. Kiambu			1	2				3
S. Kingabwa		1						1
S. Kintambo				1				1
S. Kottbus			2		3			5
S. Litchfield		2	4	9			1	16
S. London			3				1	4
S. Lowestoft	1							1
S. Manhattan	2	1		2				5
S. Mapo	1							1
S. Mbandaka	3		4	2			1	10
S. Miami	2	2		1				5
S. Minnesota				1	2			3
S. Mississippi		1		10			1	12
S. Monschau				1				1
S. Montevideo	8	4	20	8	4	3	6	53
S. Mountpleasant			1					1
S. Muenchen	3	10	6	9			3	31
S. Muenster	3		1	1				5
S. Newmexico				1				1
S. Newport	43	42	50	106	19	4	18	282
S. Nima			1					1
S. Nitra					1			1
S. Norwich		2		18				20
S. Oakland			1	1				2
S. Ohio					1			1
S. Oranienburg	4	5	4	4	3		2	22
S. Oranienburg var. 14+				8				8
S. Orion			1	1				2
S. Oslo			2					2
S. Panama			4	3	3		2	12
S. Paratyphi A			5	2				7
S. Paratyphi B	1	1		3		3	6	14
S. Paratyphi B var. L(+) tartrate+	18	10	19	17	6	1		71
S. Pomona		1	1	1			1	4
S. Poona	3	4	1		1	1		10
S. Putten				3				3
S. Reading			2	2	1			5
S. Roodepoort			1					1
S. Rubislaw			2	4				6
S. Saintpaul	19	1	22	9		1	5	57

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=West North Central

Serotype	States							Total
	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	
S. Sandiego			3	3	1			7
S. Schwarzengrund	1	2	2	4	2			11
S. Senftenberg	1		2	3	1		1	8
S. Shubra				1				1
S. Stanley	2	1	23				2	28
S. Suelldorf			1	1				2
S. Teitelkebir				2				2
S. Tennessee		1	2				1	4
S. Thompson	12	4	6	58		1		81
S. Tilene					1			1
S. Typhi	2		3	1	1			7
S. Typhimurium	60	37	98	225	40	13	57	530
S. Typhimurium var. 5-	28	12	41		18			99
S. Uganda	1		5	2				8
S. Urbana	1		2	1				4
S. Virchow	2		4	1	2			9
S. Waral				1				1
S. Weslaco				1				1
S. Worthington				1			1	2
S. I 4,[5],12:i:-	30		10	21	2			63
S. I 9,12:l,z28:-			1					1
S. IIIa 51:z4,z24:-					1			1
S. IIIb 48:i:z					1			1
S. IIIb 60:r:e,n,x,z15				1				1
S. IIIb 61:i:z				1				1
S. IV 6,7:z4,z24:-				1				1
S. IV 43:z4,z23:-			1					1
S. IV 44:z36,[z38]:-				1				1
S. IV 44:z4,z23:-	1							1
S. IV 48:g,z51:-				1				1
S. IV 50:g,z51:-	1							1
Partially serotyped isolates	9	15	4	20	1		3	52
Rough or nonmotile isolates			1					1
Unknown		1	11			2		14
Total	390	235	664	833	165	46	154	2487

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=South Atlantic

Serotype	States									Total
	Delaware	District of Columbia	Florida	Georgia	Maryland	North Carolina	South Carolina	Virginia	West Virginia	
S. Aarhus				1				2		3
S. Abaetetuba							1			1
S. Adelaide				2	4	1		3		10
S. Agama				1	1					2
S. Agbeni	1		1							2
S. Agona	1			9	6	9	4	16		45
S. Agoueve				1						1
S. Alachua								2		2
S. Albany				1			1	1		3
S. Anatum			1	4	5	5	2	4		21
S. Anatum var. 15+							1			1
S. Baildon								3		3
S. Bardo				2	20					22
S. Bareilly				17		18		6		41
S. Barranquilla				1				1		2
S. Beaudesert					1					1
S. Bere						1				1
S. Berta				37	6	7	4	11	3	68
S. Blegdam				1						1
S. Blockley			1		1		1			3
S. Bonariensis						1				1
S. Bovismorbificans	1			1	3	1	1	5	1	13
S. Bradford	1									1
S. Braenderup	2		2	30	12	19	7	17	1	90
S. Brancaster					1					1
S. Brandenburg				8	1	13		3		25
S. Brazil				1						1
S. Bredeney	1				2			1		4
S. Buzu				1						1
S. Carrau						2				2
S. Cerro				2						2
S. Chailey						1				1
S. Chester				4						4
S. Chichiri				1						1
S. Choleraesuis				1						1
S. Colindale				3			2	1		6
S. Cubana	1				1					2
S. Daytona				4						4
S. Denver					1					1
S. Derby	1			13		4	5	5		28
S. Dublin						1				1
S. Duesseldorf				1		1				2
S. Eastbourne				2						2
S. Edinburg					1			1		2

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=South Atlantic

Serotype	States									Total
	Delaware	District of Columbia	Florida	Georgia	Maryland	North Carolina	South Carolina	Virginia	West Virginia	
S. Emek			1							1
S. Enteritidis	30		2	107	294	184	60	139	54	870
S. Florida				1			2			3
S. Fluntern					1					1
S. Friedenau						1				1
S. Gaminara				11		3	11	1		26
S. Give				3	1	1	2	4		11
S. Give var. 15+				1						1
S. Goettingen				1						1
S. Haardt	1				1			2		4
S. Hadar	2			4	4	6	2	5		23
S. Harburg								1		1
S. Hartford				16	7	3	5	11		42
S. Hatfield						1				1
S. Havana					1					1
S. Heidelberg	6		1	72	44	48	18	68	3	260
S. Herston								1		1
S. Hessarek				1						1
S. Hiduddify						2				2
S. Hillegersberg								1		1
S. Hvittingfoss					2			2		4
S. Ibadan						1				1
S. Indiana				1	3					4
S. Infantis				20	11	20	1	12		64
S. Inganda	1									1
S. Inverness				8	2	5				15
S. Irumu					1	1				2
S. Isangi				1						1
S. Istanbul					2			1		3
S. Javiana	8		3	264	37	147	87	18		564
S. Johannesburg				3		1	1			5
S. Kentucky					2	3		2		7
S. Kiambu				1	1			4		6
S. Krefeld								1		1
S. Kua						2				2
S. Lagos					1					1
S. Leeuwarden				1						1
S. Lika					4					4
S. Lindenburg					1					1
S. Litchfield	1			4	1			3		9
S. Liverpool								1		1
S. Loanda						1				1
S. Lome								1		1
S. London				1	1					2

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=South Atlantic

Serotype	States									Total
	Delaware	District of Columbia	Florida	Georgia	Maryland	North Carolina	South Carolina	Virginia	West Virginia	
S. Louga				1						1
S. Luciana				3						3
S. Madelia				1			2			3
S. Manhattan				1		2				3
S. Matadi								1		1
S. Mbandaka				11		2	2	5		20
S. Mendoza					1					1
S. Menston					2					2
S. Mgulani					1					1
S. Miami	1		2	16	2	5	2	1		29
S. Minnesota	1			2				1		4
S. Mississippi				99	1	39	22	4		165
S. Mono				1						1
S. Monschaui				1		1				2
S. Montevideo	1			46	17	66	7	23	6	166
S. Muenchen	3		4	91	6	38	29	20	5	196
S. Muenster				1	4				1	6
S. Muenster var. 15+									2	2
S. Newport	11		7	371	82	252	83	108	8	922
S. Nima	1									1
S. Norwich				3	1		1			5
S. Obogu									2	2
S. Ohio	1			1		1	1	2		6
S. Okatie					3					3
S. Oranienburg	5			26	4	1	6	15		57
S. Orientalis					8					8
S. Oslo						2	1	1		4
S. Othmarschen									1	1
S. Overschie								1		1
S. Pakistan							2			2
S. Panama				3	11	1		4		19
S. Paratyphi A	1		1		9	1		10		22
S. Paratyphi B				15	2		2	11	1	31
S. Paratyphi B var. L(+) tartrate+				11	3	11	5	3	5	38
S. Pensacola				1						1
S. Poano	1									1
S. Pomona					2	2				4
S. Poona			1	7		6		2	2	18
S. Putten						1				1
S. Reading			1		1		1	2	1	6
S. Rehovot					1					1
S. Richmond	1									1
S. Rissen					1	1			1	3
S. Roodepoort							1			1

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=South Atlantic

Serotype	States									Total
	Delaware	District of Columbia	Florida	Georgia	Maryland	North Carolina	South Carolina	Virginia	West Virginia	
S. Rubislaw				8	5	6	4			23
S. Saintpaul	4		2	49	46	16	15	32	4	168
S. Sandiego			1	1	6	2	7		1	18
S. Schwarzengrund					6	3	1	6		16
S. Sekondi					1					1
S. Senegal					1					1
S. Senftenberg			11	1	5	1	2	3		23
S. Singapore				1						1
S. Stanley	1			7	4	4	1		1	18
S. Stormont				1						1
S. Suberu			1							1
S. Sundsvall				3		2				5
S. Tallahassee				3						3
S. Telekebir						1		1		2
S. Tennessee					3		1			4
S. Thompson	1		3	18	4	16	2	10	1	55
S. Tornow				2						2
S. Tshiongwe					2					2
S. Typhi	1	3	14	6	13	9	1	16		63
S. Typhimurium	31		13	175	128	316	91	259	29	1042
S. Typhimurium var. 5-	1			142	85					228
S. Uccle								1		1
S. Uganda	1			4		1		2		8
S. Uganda var. 15+					1					1
S. Urbana	1				6	1				8
S. Uzaramo						1		1		2
S. Virchow				1	2			1		4
S. Virginia				2				1		3
S. Wandsworth	1			3						4
S. Weltevreden			1	1	3			2		7
S. Wichita						1				1
S. Worthington				1				1		2
S. Yovokome			1							1
S. Zanzibar					1	1				2
S. I 4,[5],12:e,h:-					2					2
S. I 4,[5],12:i:-	3			19	36				7	65
S. I 4,[5],12:r:-				2						2
S. I 6,7:-:1,5					7					7
S. I 6,7:k:-					2					2
S. I 6,8:e,h:-					1					1
S. II 6,7:z39:1,5,7						1				1
S. II 13,22:z29:1,5					1	1				2
S. II 48:b:z6					1					1
S. IIIa 41:z4,z23:-	1									1

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=South Atlantic

Serotype	States									Total
	Delaware	District of Columbia	Florida	Georgia	Maryland	North Carolina	South Carolina	Virginia	West Virginia	
S. IIIa 48:z4,z24:-					1					1
S. IIIb 61:c:-					1					1
S. IIIb 61:c:z35					1					1
S. IIIb 61:k:1,5,(7)				1						1
S. IV 6,7:z4,z24:-	1				3		1			5
S. IV 16:z4,z32:-				1	1					2
S. IV 43:z4,z23:-						1				1
S. IV 44:z4,z23:-					1					1
S. IV 45:g,z51:-					2					2
S. IV 48:g,z51:-				1						1
S. IV 48:z4,z23:-					2					2
S. IV 50:g,z51:-				1						1
Partially serotyped isolates	1	14	667	65	4	7	5	64	3	830
Rough or nonmotile isolates					5	1				6
Unknown			203	6	5	10	18			242
Total	133	17	945	1907	1048	1348	534	974	143	7049

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East South Central

Serotype	States				Total
	Alabama	Kentucky	Mississippi	Tennessee	
S. Aarhus			2	1	3
S. Agbeni				1	1
S. Agona		2	1	2	5
S. Amsterdam	2				2
S. Anatum	1	3		3	7
S. Anatum var. 15+				1	1
S. Anecho			1		1
S. Aqua			1		1
S. Bardo		1	1		2
S. Bareilly	11	11	3	27	52
S. Belem			1		1
S. Berta		6			6
S. Blockley	2			1	3
S. Bournemouth			1		1
S. Bovismorbificans	1	1		1	3
S. Bradford				1	1
S. Braenderup	16	11	1	22	50
S. Brandenburg	2			4	6
S. Bredeney	1				1
S. Cerro var. 14+				2	2
S. Choleraesuis		1			1
S. Cotham				1	1
S. Daytona				1	1
S. Derby	2	1	1	3	7
S. Ealing			1	1	2
S. Eastbourne		1		1	2
S. Echa			1		1
S. Elokate	1				1
S. Enteritidis	47	62	23	62	194
S. Gaminara	9	2	2	1	14
S. Give	6		7		13
S. Hadar	2	3	1	4	10
S. Hartford	6	6	2	5	19
S. Havana				1	1
S. Heidelberg	25	12	7	42	86
S. Hvittingfoss	1	2		1	4
S. Ibadan				1	1
S. Indiana				2	2
S. Infantis	5	2	1	5	13
S. Inverness			3		3
S. Javiana	114	8	95	32	249
S. Joal	1				1
S. Johannesburg				1	1
S. Kambole			1		1
S. Kintambo		1		1	2

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=East South Central

Serotype	States				Total
	Alabama	Kentucky	Mississippi	Tennessee	
S. Larochele		1			1
S. Litchfield	4	2	2	3	11
S. Lomita			5		5
S. London	1			1	2
S. Luciana	1				1
S. Manhattan	1	1		1	3
S. Matadi		1			1
S. Mbandaka	3	1		12	16
S. Miami		2		2	4
S. Michigan			1		1
S. Minnesota				2	2
S. Mississippi	32	2	89	17	140
S. Mono			1		1
S. Monschau				2	2
S. Montevideo	37	6	10	15	68
S. Muenchen	45	5	25	7	82
S. Muenster	1	1			2
S. Nchanga		1			1
S. Newport	110	47	132	95	384
S. Norwich	7	3	15	17	42
S. Nottingham				1	1
S. Nyborg	1				1
S. Ohio		2			2
S. Oldenburg			1		1
S. Oranienburg		9	2	7	18
S. Oranienburg var. 14+				2	2
S. Oslo				1	1
S. Overschie				1	1
S. Panama	3	1		1	5
S. Paratyphi A	1			3	4
S. Paratyphi B			1		1
S. Paratyphi B var. L(+) tartrate+	1	7	16	11	35
S. Poano			1		1
S. Pomona	1				1
S. Poona	3	1		5	9
S. Putten		1			1
S. Reading		1			1
S. Rittersbach	1				1
S. Rubislaw	2		23		25
S. Saintpaul	14	5	6	14	39
S. Sandiego	1			1	2
S. Saphra			1		1
S. Schleissheim	7	1			8
S. Schwarzengrund	2	4		9	15
S. Senftenberg	2			2	4

TABLE 4

***Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003***

Region=East South Central

Serotype	States				Total
	Alabama	Kentucky	Mississippi	Tennessee	
S. Sinstorf			1		1
S. Stanley	1	2	1	6	10
S. Thompson	5	10	1	7	23
S. Trachau			1		1
S. Typhi	4	1		4	9
S. Typhimurium	144	61	104	157	466
S. Typhimurium var. 5-		31	19	24	74
S. Urbana	1			2	3
S. Vejle			2		2
S. Vejle var. 15+			1		1
S. Widemarsh				2	2
S. Worthington				2	2
S. Yehuda			1		1
S. I 4,[5],12:i:-	21		10	25	56
S. I 6,7:-:1,6			1		1
S. I 9,12:l,z28:-			7		7
S. II 47:b:1,5				1	1
S. IIIa 48:g,z51:-	2				2
S. IIIb 38:(k):z35				1	1
S. IV 45:g,z51:-	1			1	2
S. IV 48:g,z51:-		1			1
Partially serotyped isolates	14	5	7	19	45
Rough or nonmotile isolates			1		1
Unknown	4	20	11	155	190
Total	733	372	656	869	2630

TABLE 4

***Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003***

Region=West South Central

Serotype	States			Total
	Arkansas	Louisiana	Oklahoma	
S. Agona	10	3	4	17
S. Anatum		6	3	9
S. Arechavaleta			2	2
S. Bareilly	32	19	12	63
S. Berta	1	2	2	5
S. Blockley		6		6
S. Braenderup	2	19	7	28
S. Brandenburg		2		2
S. Bredeney	2	3	2	7
S. California			1	1
S. Coeln			1	1
S. Cubana		1		1
S. Derby	2	2	1	5
S. Enteritidis	30	34	22	86
S. Fluntern		2		2
S. Gaminara		18		18
S. Give		22	1	23
S. Hadar	1	2	3	6
S. Hartford		6	1	7
S. Havana	1			1
S. Heidelberg	18	43	9	70
S. Hindmarsh			1	1
S. Hvitittingfoss		5	1	6
S. Ibadan	1			1
S. Infantis		10	6	16
S. Inverness		6		6
S. Itami		1	1	2
S. Javiana	93	111	10	214
S. Kiambu		1	1	2
S. Kintambo		1		1
S. Larochelle	3			3
S. Litchfield	3	3	5	11
S. Mbandaka		3	2	5
S. Meleagridis			2	2
S. Mississippi	12	85	1	98
S. Montevideo	7	49	3	59
S. Muenchen	1	48	9	58
S. Newport	204	226	90	520
S. Nigeria	1			1
S. Norwich	21	10	6	37
S. Ohio		2		2
S. Oranienburg		15	10	25
S. Oslo			1	1
S. Panama		1		1
S. Paratyphi A			2	2

TABLE 4

***Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003***

Region=West South Central

Serotype	States			Total
	Arkansas	Louisiana	Oklahoma	
S. Paratyphi B			7	7
S. Paratyphi B var. L(+) tartrate+	2	1	22	25
S. Pomona		2		2
S. Poona		1	2	3
S. Putten		1		1
S. Reading		4	1	5
S. Rubislaw	6	14	6	26
S. Saintpaul	5	10	6	21
S. San Diego			2	2
S. Saphra		11		11
S. Schwarzengrund		2		2
S. Senftenberg		6		6
S. Stanley		3	3	6
S. Thompson	1	5	2	8
S. Typhi		1	1	2
S. Typhimurium	133	79	64	276
S. Uganda			5	5
S. Wandsworth		1		1
S. Worthington	1			1
S. I 4,[5],12:i:-		24	28	52
S. I 6,7:-:1,5			1	1
S. I 6,7:e,h:-			1	1
S. I 6,8:d:-		1		1
S. I 9,12:l,z28:-		2		2
Partially serotyped isolates	2	7	24	33
Unknown	13	1		14
Total	608	943	397	1948

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Mountain

Serotype	States								Total
	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming	
S. Abony	2								2
S. Adelaide		2			1		1		4
S. Agona	21	7	3		5	6	2		44
S. Alachua	1	2							3
S. Albany		1	1				1		3
S. Amsterdam					1	1			2
S. Anatum	6		3		3	6	1	1	20
S. Anatum var. 15+	1	1							2
S. Bareilly	3	1							4
S. Berta	1	1				1	2		5
S. Blockley	1						1		2
S. Bochum		1							1
S. Bovismorbificans	1								1
S. Braenderup	12	7			12	6	5		42
S. Brandenburg	1	2	1		1		1		6
S. Brazil						1			1
S. Bredeney	1				1		1		3
S. California	3	1							4
S. Cannstatt	1								1
S. Carrau	1				2				3
S. Cerro	1	1							2
S. Chester						1	1		2
S. Choleraesuis		1							1
S. Colorado		1							1
S. Cotham		1			1				2
S. Cubana			1						1
S. Dahra					1				1
S. Denver	1	1							2
S. Derby	3	1			1		1		6
S. Dublin	5		1			1			7
S. Ealing		1					1		2
S. Eastbourne	3					2	1		6
S. Edinburg	2								2
S. Enteritidis	75	56	69		18	13	40	3	274
S. Fayed		1							1
S. Fluntern		1							1
S. Freetown					1				1
S. Galiema							1		1
S. Gallinarum		2							2
S. Gaminara	1	2	1			3			7
S. Gatuni	1								1
S. Georgia	1								1
S. Gera	1								1
S. Give	2	1							3
S. Give var. 15+		1							1

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Mountain

Serotype	States								Total
	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming	
S. Hadar	11		1			1			13
S. Hartford						1			1
S. Heidelberg	30	26	10		12	10	11	33	132
S. Herston		1							1
S. Indiana	2	1							3
S. Infantis	7	7			3	6	1		24
S. Irumu		1							1
S. Itami							1		1
S. Javiana	12	9	1			48	3	1	74
S. Johannesburg	2	1							3
S. Kaapstad						1			1
S. Kentucky	3	1				2			6
S. Kiambu	5	3				30	1		39
S. Kottbus								1	1
S. Lindenburg						1			1
S. Litchfield	2	1			1	1			5
S. Lomalinda		1				1			2
S. Lomita	1								1
S. Manchester							1		1
S. Manhattan	2	2	1						5
S. Mbandaka	2	5			1	8	3		19
S. Meleagridis					1		1		2
S. Mikawasima	2								2
S. Minnesota	1	1			1	2			5
S. Montevideo	22	12	7		12	12	4		69
S. Muenchen	22	7	2		3	10	5		49
S. Muenster	3	1	1		1				6
S. Newmexico						4			4
S. Newport	50	59	29		11	22	28	1	200
S. Norwich					2	1			3
S. Ohio		1					1		2
S. Oranienburg	51	16	3		1	7	8		86
S. Oslo							1		1
S. Othmarschen	3								3
S. Panama	29	2			2	2	2		37
S. Paratyphi A	2	4					1		7
S. Paratyphi B	1				3	2			6
S. Paratyphi B var. L(+) tartrate+	3	12	2		4		1		22
S. Poano							1		1
S. Pomona	2	1	2				2		7
S. Poona	32	3	1			2	2		40
S. Potsdam					1				1
S. Putten			1						1
S. Reading	4	2			5		1		12
S. Redlands		1							1

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Mountain

Serotype	States								Total
	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming	
S. Roodepoort							1		1
S. Rubislaw	3								3
S. Saintpaul	21	11	4		9	10	8	2	65
S. Sandiego	5	4	2			1			12
S. Santiago		1							1
S. Schwarzengrund	4	2	1			1	1		9
S. Senftenberg	2	4	1		1	1	2		11
S. Soerenga		1							1
S. Stanley	2	4	1		4	3	5	1	20
S. Sundsvall	3							1	4
S. Takoradi							2		2
S. Tallahassee						1			1
S. Tennessee	2	2							4
S. Thompson	7	2	2		3	3	4		21
S. Tilene					1				1
S. Toucra	1								1
S. Typhi	3	4	1		1	1			10
S. Typhimurium	159	91	22		30	48	74		424
S. Typhimurium var. 5-		36	11		4	7		2	60
S. Uganda							2		2
S. Urbana	2	2					2		6
S. Virchow	2	1				2			5
S. Weltevreden		1							1
S. Woodinville	1								1
S. Worthington					1				1
S. I 4,[5],12:i:-	7	1	7		1		1		17
S. I 9,12:l,v:-							1		1
S. II 13,22:z29:1,5		1							1
S. II 35:z29:e,n,x		1							1
S. II 50:b:z6			1						1
S. IIIa 48:g,z51:-	1		1						2
S. IIIb 38:(k):z35			1						1
S. IIIb 60:r:e,n,x,z15	1								1
S. IIIb 61:l,[v],[z13]:1,5,[7]	1								1
S. IV 16:z4,z32:-					1				1
S. IV 44:z4,z23:-	1								1
S. IV 48:g,z51:-	2								2
Partially serotyped isolates	26	9	3	89	2	9			138
Rough or nonmotile isolates		1							1
Unknown		28			3	12	9		52
Total	714	485	199	89	173	314	251	46	2271

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Pacific

Serotype	States					Total
	Alaska	California	Hawaii	Oregon	Washington	
S. Aarhus					2	2
S. Aberdeen			1			1
S. Adelaide		14	1			15
S. Agona		94	2	8	4	108
S. Albany		1	6			7
S. Amager			3			3
S. Amsterdam		2				2
S. Anatum		21	2	2	6	31
S. Anatum var. 15+	1					1
S. Apapa					2	2
S. Bardo		13				13
S. Bareilly		10			6	16
S. Berta		16	1		1	18
S. Birkenhead			3			3
S. Blegdam		1				1
S. Blockley		8			2	10
S. Bovismorbificans		7			1	8
S. Braenderup	1	65	1	1	5	73
S. Brandenburg		16	1	1	10	28
S. Bredeney		6			2	8
S. Brooklyn					1	1
S. Cerro		12			1	13
S. Cerro var. 14+		1				1
S. Chester		4		16	12	32
S. Choleraesuis		1			1	2
S. Clackamas				3	1	4
S. Concord				1		1
S. Corvallis		2				2
S. Cotham		2				2
S. Cubana		4		1		5
S. Daytona					1	1
S. Denver					1	1
S. Derby		15	1		6	22
S. Diguél	1					1
S. Dublin		25		3	2	30
S. Eastbourne		1		1		2
S. Edinburg		1		1		2
S. Elomrane					1	1
S. Emek		1				1
S. Enteritidis	23	570	9	60	190	852
S. Essen		1				1
S. Falkensee		1				1
S. Fluntern					1	1
S. Gaminara		3			1	4
S. Give		7	5		1	13

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Pacific

Serotype	States					Total
	Alaska	California	Hawaii	Oregon	Washington	
S. Give var. 15+	1					1
S. Haardt		1		2		3
S. Hadar	1	29	1	6	9	46
S. Hartford		5		3	3	11
S. Havana		8		1	1	10
S. Heidelberg	2	220	7	12	52	293
S. Hindmarsh			1		1	2
S. Horsham		1				1
S. Hvittingfoss	1	4				5
S. Indiana		7		1		8
S. Infantis	3	64	2	2	9	80
S. Inpraw					1	1
S. Inverness		3				3
S. Irumu		3				3
S. Istanbul		1	1			2
S. Itami		3		1	1	5
S. Javiana		37	1	4	7	49
S. Johannesburg		1			1	2
S. Kentucky		15				15
S. Kiambu		19		2		21
S. Kingabwa		1				1
S. Kintambo		2				2
S. Kottbus		1				1
S. Litchfield		24				24
S. Livingstone		1				1
S. Lomalinda		5		1		6
S. London		14		1		15
S. Manhattan		12				12
S. Mbandaka	1	28		1	4	34
S. Meleagridis		4	1			5
S. Michigan		1				1
S. Minnesota		2				2
S. Mississippi		2			1	3
S. Molade				1		1
S. Monschau	1	1				2
S. Montevideo	1	118	6	16	43	184
S. Muenchen	2	73	12	5	11	103
S. Muenster		14		2		16
S. Newmexico		1				1
S. Newport	2	302	23	38	55	420
S. Nieukerk					1	1
S. Ohio		6		2	1	9
S. Okatie		1				1
S. Onderstepoort		1				1
S. Oranienburg		87	3	13	14	117

TABLE 4

**Salmonella isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Pacific

Serotype	States					Total
	Alaska	California	Hawaii	Oregon	Washington	
S. Orion			1			1
S. Oslo		2	4			6
S. Ouakam		1				1
S. Pakistan		1				1
S. Panama		48	6	4		58
S. Paratyphi A		28	1	2	2	33
S. Paratyphi B	1	53	3		2	59
S. Paratyphi B var. L(+) tartrate+				7	5	12
S. Pensacola		1				1
S. Poano	1			1		2
S. Pomona		7		1	1	9
S. Poona		21		3	5	29
S. Potsdam		3				3
S. Putten		1				1
S. Reading		18		1	5	24
S. Richmond		1				1
S. Rissen		1			2	3
S. Rubislaw		1				1
S. Saintpaul		139	4	34	30	207
S. Sandiego		9			1	10
S. Santiago		1				1
S. Schwarzengrund		36	3		2	41
S. Senftenberg		19		1		20
S. Shubra		1				1
S. Singapore					1	1
S. Stanley		41	1	5	13	60
S. Stanleyville		1				1
S. Sundsvall					1	1
S. Takoradi		1				1
S. Tallahassee		2				2
S. Telekebir		5				5
S. Tennessee	1	3			2	6
S. Thompson		41	1	2	20	64
S. Toucra		1				1
S. Typhi	1	78	1		8	88
S. Typhimurium	32	411	50	78	143	714
S. Typhimurium var. 5-		171		1		172
S. Uganda		11				11
S. Urbana		6			2	8
S. Virchow		24			2	26
S. Waycross		2				2
S. Weltevreden		9	36	2	2	49
S. Westhampton					6	6
S. Worthington		1				1
S. Yoruba			1			1

TABLE 4

***Salmonella* isolates from Human sources
by Serotype, Geographic Region and State, 2003**

Region=Pacific

Serotype	States					Total
	Alaska	California	Hawaii	Oregon	Washington	
S. I 4,[5],12:b:-				1		1
S. I 4,[5],12:i:-				4	5	9
S. I 6,7:-:1,5				2		2
S. I 6,7:k:-				2		2
S. I 9,12:-:1,5				1		1
S. II 50:b:z6				1		1
S. IIIa 18:z4,z23:-				2		2
S. IIIa 18:z4,z32:-				2		2
S. IIIa 48:z4,z24:-				1		1
S. IIIb 50:z52:z35				1		1
S. IV 44:z4,z23:-				1		1
S. IV 50:g,z51:-					1	1
Partially serotyped isolates	2		10		20	32
Rough or nonmotile isolates				1		1
Unknown		12			3	15
Total	79	3259	216	373	760	4687

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Aarhus		1			3	3			2	9
S. Aba		1								1
S. Abaetetuba					1					1
S. Aberdeen	1	1							1	3
S. Abony	2	2	2	1				2		9
S. Adelaide	2	12	10	5	10			4	15	58
S. Adime		1								1
S. Agama		2			2					4
S. Agbeni			4		2	1				7
S. Agona	31	105	121	34	45	5	17	44	108	510
S. Agoueve			1		1					2
S. Ajiobo				1						1
S. Alachua	1	2	2		2			3		10
S. Albany	1		1	2	3			3	7	17
S. Amager									3	3
S. Amsterdam						2		2	2	6
S. Anatum	9	21	31	21	21	7	9	20	31	170
S. Anatum var. 15+	1	1	1		1	1		2	1	8
S. Anecho				1		1				2
S. Apapa				1					2	3
S. Aqua						1				1
S. Arechavaleta	1						2			3
S. Baildon	2	2	3	2	3					12
S. Banana			1	1						2
S. Bardo		2		3	22	2			13	42
S. Bareilly	6	13	11	28	41	52	63	4	16	234
S. Barranquilla		1			2					3
S. Bassa			1							1
S. Beaudesert					1					1
S. Belem						1				1
S. Bere					1					1
S. Bergen	1									1
S. Berta	18	20	43	14	68	6	5	5	18	197
S. Birkenhead		1							3	4
S. Bispebjerg		1								1
S. Blegdam					1				1	2
S. Blijdorp			1							1
S. Blockley	9	24	6	3	3	3	6	2	10	66
S. Bochum								1		1
S. Bonames		1								1
S. Bonariensis	1			1	1					3
S. Bournemouth		1				1				2
S. Bovismorbificans	3	9	22	10	13	3		1	8	69
S. Bradford				1	1	1				3
S. Braenderup	35	67	105	40	90	50	28	42	73	530

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Brancaster					1					1
S. Brandenburg	3	14	26	5	25	6	2	6	28	115
S. Brazil					1			1		2
S. Brazzaville		1								1
S. Bredeney	1	7	9	12	4	1	7	3	8	52
S. Brezany		1								1
S. Brooklyn									1	1
S. Bukavu				1						1
S. Buzu					1					1
S. California							1	4		5
S. Canada		1								1
S. Cannstatt								1		1
S. Carrau			1		2			3		6
S. Cerro	1	3	4		2			2	13	25
S. Cerro var. 14+						2			1	3
S. Chailey					1					1
S. Chester		2	4	6	4			2	32	50
S. Chicago			1							1
S. Chichiri					1					1
S. Chincol				1						1
S. Choleraesuis		4	3	1	1	1		1	2	13
S. Choleraesuis var. Kunzendorf	3		2	1						6
S. Clackamas									4	4
S. Coeln		1					1			2
S. Colindale	1		1		6					8
S. Colorado								1		1
S. Concord		2							1	3
S. Corvallis	1								2	3
S. Cotham			1			1		2	2	6
S. Cubana		10	4		2		1	1	5	23
S. Dahomey		1								1
S. Dahra								1		1
S. Daytona		1	1	2	4	1			1	10
S. Denver		1			1			2	1	5
S. Derby	3	15	22	16	28	7	5	6	22	124
S. Diguel									1	1
S. Doncaster				1						1
S. Dublin	4	11	11		1			7	30	64
S. Duesseldorf	1	2		1	2					6
S. Duisburg		2								2
S. Durban		3								3
S. Durham		3	1							4
S. Ealing	1	1	1	5		2		2		12
S. Eastbourne	1	1	2	2	2	2		6	2	18
S. Ebrie		1								1

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Echa						1				1
S. Edinburg	3	3	5	3	2			2	2	20
S. Elokate						1				1
S. Elomrane									1	1
S. Emek			6	2	1				1	10
S. Entebbe		1								1
S. Enteritidis	355	1099	836	297	870	194	86	274	852	4863
S. Essen									1	1
S. Falkensee									1	1
S. Farmsen			1							1
S. Fayed								1		1
S. Ferruch		1								1
S. Florida					3					3
S. Fluntern					1		2	1	1	5
S. Freetown	2	2						1		5
S. Freiburg			1							1
S. Friedenau					1					1
S. Galiema								1		1
S. Gallinarum								2		2
S. Gaminara	1	7	6	1	26	14	18	7	4	84
S. Gatuni		1						1		2
S. Georgia			1					1		2
S. Gera								1		1
S. Give	1	10	12		11	13	23	3	13	86
S. Give var. 15+			3	1	1			1	1	7
S. Glostrup		1	1							2
S. Goettingen					1					1
S. Goma	1									1
S. Grumpensis		1								1
S. Haardt		45			4				3	52
S. Hadar	32	80	47	23	23	10	6	13	46	280
S. Haifa		1		2						3
S. Harburg					1					1
S. Hartford	14	18	61	15	42	19	7	1	11	188
S. Hatfield					1					1
S. Hato		1								1
S. Havana		3	8	5	1	1	1		10	29
S. Heidelberg	129	377	308	155	260	86	70	132	293	1810
S. Herston					1			1		2
S. Hessarek					1					1
S. Hiduddify					2					2
S. Hillegersberg					1					1
S. Hindmarsh			2				1		2	5
S. Holcomb		1								1
S. Horsham									1	1

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Hull			1	1						2
S. Hvitvingfoss	4	4	1	4	4	4	6		5	32
S. Ibadan				1	1	1	1			4
S. Idikan	1									1
S. Indiana		9	12	4	4	2		3	8	42
S. Infantis	29	76	206	31	64	13	16	24	80	539
S. Inganda		1			1					2
S. Inpraw									1	1
S. Inverness		1		1	15	3	6		3	29
S. Irenea		1								1
S. Irumu	1		2		2			1	3	9
S. Isangi		1	2		1					4
S. Israel		2								2
S. Istanbul		10			3				2	15
S. Itami							2	1	5	8
S. Javiana	42	52	340	75	564	249	214	74	49	1659
S. Jerusalem		1								1
S. Joal						1				1
S. Johannesburg		5		1	5	1		3	2	17
S. Kaapstad			1					1		2
S. Kambole						1				1
S. Kentucky	1	14	11	5	7			6	15	59
S. Kiambu	1	6	5	3	6		2	39	21	83
S. Kingabwa			2	1					1	4
S. Kintambo	2		2	1		2	1		2	10
S. Kokomlemle			1							1
S. Konstanz		1								1
S. Kottbus				5				1	1	7
S. Krefeld					1					1
S. Kua					2					2
S. Lagos					1					1
S. Larochelle						1	3			4
S. Leeuwarden					1					1
S. Lika					4					4
S. Lindenburg			1		1			1		3
S. Litchfield	11	43	35	16	9	11	11	5	24	165
S. Liverpool					1					1
S. Livingstone		1							1	2
S. Llandoff			1							1
S. Loanda					1					1
S. Lomalinda	2	1	1					2	6	12
S. Lome					1					1
S. Lomita						5		1		6
S. London	3	3	13	4	2	2			15	42
S. Louga					1					1

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Lowestoft				1						1
S. Luciana					3	1				4
S. Madelia	1		1		3					5
S. Manchester								1		1
S. Manhattan	6	16	2	5	3	3		5	12	52
S. Mapo				1						1
S. Marburg	1									1
S. Massenia		1								1
S. Matadi			2		1	1				4
S. Mbandaka	11	32	20	10	20	16	5	19	34	167
S. Meleagridis		1	3				2	2	5	13
S. Mendoza					1					1
S. Menston					2					2
S. Mgulani					1					1
S. Miami	8	7	13	5	29	4				66
S. Michigan						1			1	2
S. Mikawasima		2						2		4
S. Minnesota		4	5	3	4	2		5	2	25
S. Mississippi	6	5	9	12	165	140	98		3	438
S. Molade			1						1	2
S. Mono					1	1				2
S. Monschau		3	3	1	2	2			2	13
S. Montevideo	37	116	97	53	166	68	59	69	184	849
S. Mountpleasant				1						1
S. Muenchen	61	96	105	31	196	82	58	49	103	781
S. Muenster	6	17	11	5	6	2		6	16	69
S. Muenster var. 15+	7				2					9
S. Nagoya	1									1
S. Nchanga			1			1				2
S. Newmexico			4	1				4	1	10
S. Newport	210	404	505	282	922	384	520	200	420	3847
S. Nieuwerkerk									1	1
S. Nigeria							1			1
S. Nima				1	1					2
S. Nitra		1		1						2
S. Norwich	2	2	6	20	5	42	37	3		117
S. Nottingham	3	7				1				11
S. Nyborg						1				1
S. Oakland		1		2						3
S. Obogu					2					2
S. Ohio	3	13	11	1	6	2	2	2	9	49
S. Okatie					3				1	4
S. Oldenburg						1				1
S. Onderstepoort	1								1	2
S. Oranienburg	44	65	120	22	57	18	25	86	117	554

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Oranienburg var. 14+			1	8		2				11
S. Orientalis					8					8
S. Orion		1	1	2					1	5
S. Oslo	1	2	3	2	4	1	1	1	6	21
S. Othmarschen		10	3		1			3		17
S. Ouakam									1	1
S. Overschie					1	1				2
S. Pakistan	1				2				1	4
S. Panama	10	31	9	12	19	5	1	37	58	182
S. Paratyphi A	7	14	12	7	22	4	2	7	33	108
S. Paratyphi B	7	47	43	14	31	1	7	6	59	215
S. Paratyphi B var. L(+) tartrate+	15	26	87	71	38	35	25	22	12	331
S. Pensacola					1				1	2
S. Poano		1	3		1	1		1	2	9
S. Pomona	8	22	8	4	4	1	2	7	9	65
S. Poonna	15	43	28	10	18	9	3	40	29	195
S. Potsdam	1	4						1	3	9
S. Praha		1								1
S. Putten	2	1	1	3	1	1	1	1	1	12
S. Reading	4	16	17	5	6	1	5	12	24	90
S. Rechovot					1					1
S. Redlands								1		1
S. Richmond	1	3			1				1	6
S. Rissen			1		3				3	7
S. Rittersbach						1				1
S. Roodepoort		3		1	1			1		6
S. Rubislaw	1	3	7	6	23	25	26	3	1	95
S. Saintpaul	58	110	98	57	168	39	21	65	207	823
S. Sandiego	9	46	20	7	18	2	2	12	10	126
S. Santiago								1	1	2
S. Saphra						1	11			12
S. Schleissheim						8				8
S. Schwarzengrund	16	39	30	11	16	15	2	9	41	179
S. Sekondi					1					1
S. Senegal					1					1
S. Senftenberg	4	10	7	8	23	4	6	11	20	93
S. Shubra			1	1					1	3
S. Singapore					1				1	2
S. Sinstorf		1				1				2
S. Soerenga								1		1
S. Stanley	15	30	37	28	18	10	6	20	60	224
S. Stanleyville		2							1	3
S. Stellingen	1									1
S. Stoneferry			1							1
S. Stormont					1					1

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Suberu					1					1
S. Sueldorf				2						2
S. Sundsvall			1		5			4	1	11
S. Takoradi	1		2					2	1	6
S. Tallahassee			2		3			1	2	8
S. Tanger		2								2
S. Telelkebir	2	7	3	2	2				5	21
S. Teltow	1									1
S. Tennessee	1	8	14	4	4			4	6	41
S. Thompson	42	80	120	81	55	23	8	21	64	494
S. Tilene	1	1		1				1		4
S. Tokoin		2								2
S. Tornow					2					2
S. Toucra								1	1	2
S. Trachau						1				1
S. Tshiongwe					2					2
S. Typhi	25	113	42	7	63	9	2	10	88	359
S. Typhimurium	349	1008	977	530	1042	466	276	424	714	5786
S. Typhimurium var. 5-	114	54	44	99	228	74		60	172	845
S. Uccle		1			1					2
S. Uganda	3	11	10	8	8		5	2	11	58
S. Uganda var. 15+			1		1					2
S. Urbana	4	22	4	4	8	3		6	8	59
S. Uzaramo			1		2					3
S. Vejle						2				2
S. Vejle var. 15+						1				1
S. Virchow	8	12	14	9	4			5	26	78
S. Virginia					3					3
S. Wagenia	1									1
S. Wandsworth	1				4		1			6
S. Waral		1		1						2
S. Warnow		1								1
S. Washington			1							1
S. Waycross									2	2
S. Weltevreden	2	3	6		7			1	49	68
S. Weslaco				1						1
S. Westhampton			2						6	8
S. Weston		1								1
S. Wichita					1					1
S. Widemarsh			2			2				4
S. Woodinville			1					1		2
S. Worthington		4	2	2	2	2	1	1	1	15
S. Yehuda						1				1
S. Yoruba									1	1
S. Yovokome					1					1

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. Zanzibar					2					2
S. I 4,[5],12:-:1,2		2	1							3
S. I 4,[5],12:b:-		13							1	14
S. I 4,[5],12:e,h:-					2					2
S. I 4,[5],12:i:-	65	47	115	63	65	56	52	17	9	489
S. I 4,[5],12:r:-	2				2					4
S. I 6,7:-:1,5		16			7		1		2	26
S. I 6,7:-:1,6						1				1
S. I 6,7:e,h:-							1			1
S. I 6,7:k:-					2				2	4
S. I 6,8:-:1,2			1							1
S. I 6,8:d:-							1			1
S. I 6,8:e,h:-		1			1					2
S. I 9,12:-:1,5									1	1
S. I 9,12:l,v:-								1		1
S. I 9,12:l,z28:-		3		1		7	2			13
S. II 6,7:z39:1,5,7					1					1
S. II 9,12:d,e,n,x			1							1
S. II 9,12:g,m,[s],t:[1,5,7]:[z42]		1	1							2
S. II 13,22:z29:1,5					2			1		3
S. II 35:z29:e,n,x								1		1
S. II 47:b:1,5						1				1
S. II 48:b:z6					1					1
S. II 50:b:z6		1	1					1	1	4
S. IIIa 18:z4,z23:-									2	2
S. IIIa 18:z4,z32:-									2	2
S. IIIa 41:z4,z23:-					1					1
S. IIIa 48:g,z51:-						2		2		4
S. IIIa 48:z4,z24:-					1				1	2
S. IIIa 51:z4,z24:-				1						1
S. IIIb 38:(k):z35						1		1		2
S. IIIb 48:i:z				1						1
S. IIIb 48:z52:z	1									1
S. IIIb 50:k:z			3							3
S. IIIb 50:z52:z35									1	1
S. IIIb 50:z:z52			1							1
S. IIIb 60:r:e,n,x,z15	1		1	1				1		4
S. IIIb 60:r:z	1		1							2
S. IIIb 61:-:1,5,[7]	1									1
S. IIIb 61:c:-					1					1
S. IIIb 61:c:z35			1		1					2
S. IIIb 61:i:z				1						1
S. IIIb 61:k:1,5,(7)					1					1
S. IIIb 61:l,[v],[z13]:1,5,[7]			1					1		2
S. IIIb 61:l,[v],[z13]:z35			3							3

TABLE 5

**Salmonella isolates from Human sources
by Serotype and Geographic Region, 2003**

Serotype	Region									Total
	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	
S. IIIb 61:r:z53			1							1
S. IIIb 61:z52:z53	1									1
S. IV 6,7:z4,z24:-	1		1	1	5					8
S. IV 11:z4,z23:-			1							1
S. IV 16:z4,z32:-					2			1		3
S. IV 43:z4,z23:-	1			1	1					3
S. IV 44:z36,[z38]:-			1	1						2
S. IV 44:z4,z23:-	2		4	1	1			1	1	10
S. IV 45:g,z51:-			3		2	2				7
S. IV 48:g,z51:-	2	6	7	1	1	1		2		20
S. IV 48:z4,z23:-					2					2
S. IV 48:z4,z32:-	1									1
S. IV 50:g,z51:-			4	1	1				1	7
S. IV 50:z4,z23:-	1	3	1							5
Partially serotyped isolates	30	104	87	52	830	45	33	138	32	1351
Rough or nonmotile isolates	4		5	1	6	1		1	1	19
Unknown	17	36	155	14	242	190	14	52	15	735
Total	2049	5086	5382	2487	7049	2630	1948	2271	4687	33589

TABLE 6

**Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Adelaide	1					1					2
S. Agona	94		59		12	13	57		3	2	240
S. Agoueve								1			1
S. Alachua	1						3				4
S. Albany									1		1
S. Amager		1									1
S. Amsterdam	1					1					2
S. Amsterdam var. 15+	1				2						3
S. Anatum	52	3	50		9	3	23			1	141
S. Anatum var. 15+	21		11							1	33
S. Anatum var. 15+, 34+	1										1
S. Anecho						1					1
S. Aqua								7			7
S. Baildon										1	1
S. Ball								1			1
S. Banana							1		1		2
S. Bardo	18		1				1	1		1	22
S. Bareilly			3			1		1			5
S. Barranquilla	1										1
S. Bere	3					1					4
S. Bergedorf								1			1
S. Berta	1		5		1		2		3		12
S. Blockley	1							1			2
S. Borreze							1				1
S. Bovismorbificans	13		6		1	1	5				26
S. Braenderup	7		38		2	2	1	1			51
S. Brandenburg	1				1		14	1			17
S. Bredeney	2	1	3	2	7		11	1	5		32
S. Carrau			1					1			2
S. Cerro	29		3		2		2	2			38
S. Chailey							1				1
S. Charity								5			5
S. Choleraesuis var. Kunzendorf	1					1	171				173
S. Cubana			1		1		4				6
S. Daytona			1								1
S. Denver					1						1
S. Derby	9	1	7		1	5	133			1	157
S. Dublin	86		2		2		2				92
S. Duisburg						1					1
S. Eastbourne					1						1
S. Enteritidis	13	14	8		10	1	9	1	3		59
S. Fluntern								1			1
S. Fresno								9			9

TABLE 6

**Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Gallinarum		8									8
S. Gaminara	1				1						2
S. Give	16		8		2	2	4	2			34
S. Give var. 15+	5		9								14
S. Glostrup								1			1
S. Hadar	3	5			23	5	2	1	23		62
S. Hartford	1		18		2		1				22
S. Havana	7		6				2	1			16
S. Heidelberg	19	35	4		6	5	60		16	2	147
S. Hvitvingfoss			1			1					2
S. Indiana					4	1					5
S. Infantis	14		19		6	5	31		12		87
S. Inverness			2								2
S. Irumu	1										1
S. Istanbul					1						1
S. Javiana	1		21		5	6	1	1			35
S. Johannesburg	1	1	1			2	5		2		12
S. Kentucky	73	30	7		8	4	4		6	1	133
S. Kiambu		1			3						4
S. Kibusi								1			1
S. Kisarawe								3			3
S. Kottbus								1			1
S. Krefeld							4				4
S. Lansing						1					1
S. Lexington	1										1
S. Lille	3					2	1				6
S. Litchfield	1		4		3	1	1	1			11
S. Liverpool	1										1
S. Livingstone		2		1			1				4
S. Lomalinda			1			1					2
S. Lome								1			1
S. Lomita	1						1				2
S. London	4		1			1	2				8
S. Manhattan	3		2		2		4				11
S. Matadi					2			1			3
S. Mbandaka	19	3	3		2	9	12		2		50
S. Meleagridis	39		2		1	1					43
S. Miami			4		5	2					11
S. Minnesota	14		1			1			1		17
S. Mississippi			3		1	2					6
S. Montevideo	96	6	7		16	3	3	2	7	1	141
S. Mountpleasant								1			1
S. Muenchen	11		13		5	5	12	3		1	50

TABLE 6

*Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003*

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Muenster	61	1	12		2	4	6	1	12		99
S. Muenster var. 15+, 34+			1								1
S. Mundonobo								1			1
S. Newmexico						1					1
S. Newport	592	2	150		67	53	15	6		3	888
S. Nima					1			1			2
S. Norwich	1		4								5
S. Ohio	2		6				12	2			22
S. Oranienburg	10		37		8	9		3			67
S. Orion			2								2
S. Orion var. 15+	3	1									4
S. Ouakam									1		1
S. Pakistan			1								1
S. Panama	1							1			2
S. Paratyphi B var. L(+) tartrate+	3		18		2	2		8			33
S. Poano								1			1
S. Pomona	1					3					4
S. Poona			1		4	1					6
S. Potsdam					6			9			15
S. Putten	3						3				6
S. Reading	29		7		9	2	2		2		51
S. Richmond								2			2
S. Rissen	1										1
S. Rubislaw	2		21		3	6		1		1	34
S. Ruiru			1								1
S. Saintpaul	7		17		18	3	5		5		55
S. Sandiego	3		1		2	5		1	1		13
S. Schwarzengrund	2	8	3			3	6		2		24
S. Senftenberg	10	2		5	14	7	18		51		107
S. Soerenga								1			1
S. Stanley							1				1
S. Sundsvall			2					1			3
S. Sunnycove								1			1
S. Taksony	1		2		1						4
S. Tennessee	4	2			2	1	2	1			12
S. Thompson	7	1	15		6	1					30
S. Typhimurium	223	13	179		74	36	55	1	1	20	602
S. Typhimurium var. 5-	241	8	35		60	34	253	2	3	1	637
S. Uganda	54		4		1	1	5		1		66
S. Uganda var. 15+	2										2
S. Urbana			1					1			2
S. Wayne			1								1
S. Weltevreden								1			1

TABLE 6

*Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003*

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Worthington	3	1	10			1	16		1	1	33
S. I 11:r:-			1			1					2
S. I 3,10:-:1,6	2										2
S. I 3,10:-:l,w	1										1
S. I 4,[5],12:d:-							1				1
S. I 4,[5],12:i:-	26	3	17		20	5	3				74
S. I 4,[5],12:r:-	1										1
S. I 6,7:-:1,5	2										2
S. I 6,8:-:1,2	4		1		3						8
S. I 6,8:d:-					1						1
S. I 6,8:e,h:-	5										5
S. I 8,(20):i:-					1						1
S. I 9,12:-:1,5								2			2
S. II 16:m,t:[z42]								1			1
S. II 21:z10:z6								2			2
S. II 47:b:e,n,x,z15					1			1			2
S. IIIa 13,z3,z4,z24:-					1						1
S. IIIa 18:z4,z32:-						1			8		9
S. IIIa 21:z4,z23:-								1			1
S. IIIa 40:z4,z23:-						1					1
S. IIIa 41:z4,z23:-		1				3		9			13
S. IIIa 41:z4,z32:-								2			2
S. IIIa 42:g,z51:-								1			1
S. IIIa 44:z4,z23,z32:-								1			1
S. IIIa 44:z4,z32:-					1						1
S. IIIa 48:g,z51:-					1			1			2
S. IIIa 48:z4,z23:-								1			1
S. IIIa 48:z4,z24:-			1					3			4
S. IIIa 53:z4,z23:-								1			1
S. IIIa 56:z4,z23:-								3			3
S. IIIb 11:k:z53								1			1
S. IIIb 16:k:z35					1						1
S. IIIb 16:z10:e,n,x,z15					1			3			4
S. IIIb 17:z10:e,n,x,z15								1			1
S. IIIb 18:l,v:z								2			2
S. IIIb 21:z10:e,n,x,z15								1			1
S. IIIb 35:l,v:z35								4			4
S. IIIb 38:(k):z35	1							2			3
S. IIIb 38:l,v:z53					1						1
S. IIIb 38:r:z35								2			2
S. IIIb 42:(k):z35								4			4
S. IIIb 42:z10:e,n,x,z15								2		1	3
S. IIIb 43:z52:z53								4			4

TABLE 6

**Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. IIIb 47:k:e,n,x,z15								1			1
S. IIIb 47:k:z35					1			11			12
S. IIIb 47:z52:e,n,x,z15								2			2
S. IIIb 48:i:z								6			6
S. IIIb 48:i:z35								2			2
S. IIIb 48:k:1,5,(7)								2			2
S. IIIb 48:k:z53								1			1
S. IIIb 48:r:e,n,x,z15								1			1
S. IIIb 48:r:z								1			1
S. IIIb 48:z:z52								2			2
S. IIIb 50:i:z								1			1
S. IIIb 50:k:z								10			10
S. IIIb 50:k:z53								1			1
S. IIIb 50:l,v:z35								6			6
S. IIIb 50:r:z								4			4
S. IIIb 50:r:z53								2			2
S. IIIb 50:z52:1,5								1			1
S. IIIb 50:z52:z35								1			1
S. IIIb 50:z52:z53	1										1
S. IIIb 50:z:z52								2			2
S. IIIb 52:z:z52								1			1
S. IIIb 53:k:e,n,x,z15								1			1
S. IIIb 53:z10:z								2			2
S. IIIb 57:c:e,n,x,z15								2			2
S. IIIb 57:c:z								2			2
S. IIIb 58:l,v:z35								4			4
S. IIIb 58:z52:z35								1			1
S. IIIb 59:k:z53								1			1
S. IIIb 60:k:z53								1			1
S. IIIb 60:r:e,n,x,z15	1							1			2
S. IIIb 60:r:z								2			2
S. IIIb 61:-:1,5,(7)	3					24	1				28
S. IIIb 61:c:z35								1			1
S. IIIb 61:i:z								2			2
S. IIIb 61:l,v:1,5,(7)								2			2
S. IIIb 61:l,v:z35								2			2
S. IIIb 61:z52:z53								2			2
S. IIIb 65:c:z								2			2
S. IIIb 65:k:z						1		1			2
S. IIIb 65:k:z53					1						1
S. IIIb 65:l,v:z								2			2
S. IIIb 65:l,v:z53								1			1
S. IV 11:z4,z23:-					1						1

TABLE 6

***Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003***

Serotype	Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. IV 16:z4,z32:-								3			3
S. IV 38:z4,z23:-								4			4
S. IV 40:z4,z24:-								1			1
S. IV 43:z4,z23:-					1			2			3
S. IV 43:z4,z32:-								2			2
S. IV 44:z4,z23:-								4			4
S. IV 44:z4,z24:-								2			2
S. IV 45:g,z51:-					1			1			2
S. IV 48:g,z51:-								2			2
S. IV 50:g,z51:-								5			5
Rough or nonmotile isolates	19	2			2	2	31				56
Total	2024	156	887	8	470	303	1027	272	173	39	5359

TABLE 7

**Non-Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Non-Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Adelaide		5								2	7
S. Agona	1	39		1		24	1		64	4	134
S. Alabama		8									8
S. Alachua	1	14				6			2		23
S. Albany									7	2	9
S. Amager		25			3						28
S. Amsterdam var. 15+		3		1							4
S. Anatum	11	10			1	3			23	10	58
S. Aqua										1	1
S. Bardo		1								4	5
S. Bareilly	3	8		1		1					13
S. Bere									2		2
S. Berta		8		4					23		35
S. Bovismorbificans	1						2		2		5
S. Braenderup	5	80				3			2		90
S. Brandenburg	2	1				4			2		9
S. Bredeney	2	57							70		129
S. Carrau		1									1
S. Cerro	5	14		1	1	2			4		27
S. Choleraesuis var. Kunzendorf									7	2	9
S. Cubana		16		3		15			8	1	43
S. Derby	1	4				6	25		12	3	51
S. Dublin	3									12	15
S. Duesseldorf										1	1
S. Eastbourne								1			1
S. Enteritidis	5	77		1	3						86
S. Fresno					1						1
S. Gaminara	3	1				1				2	7
S. Gera	2								1		3
S. Give	8	2					8		9		27
S. Give var. 15+	12	2			1	1					16
S. Godesberg		6									6
S. Haardt		2									2
S. Hadar		13		1		160			293		467
S. Hartford	5					2			3	1	11
S. Havana		4		8		12	2			1	27
S. Heidelberg	1	541		1	6	9	11		214	3	786
S. Indiana		1									1
S. Infantis		25	1	1		1			3	1	32
S. Inverness	10										10
S. Istanbul		4				3			9		16
S. Javiana	2								14		16
S. Johannesburg		6							5		11

TABLE 7

**Non-Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Non-Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Kentucky	1	295		1	10	28	1		126	5	467
S. Kiambu		4							1		5
S. Kralingen									1		1
S. Lexington		1		1		2				4	8
S. Lille		12				1			5		18
S. Litchfield		16			1	1			1		19
S. Livingstone		9		1		1			1		12
S. Lomalinda									1		1
S. Lome								1			1
S. London									1	1	2
S. Manhattan	1								1		2
S. Mbandaka	20	75			15	17	3		63	2	195
S. Meleagridis	1					1				3	5
S. Miami					1						1
S. Minnesota	1	11							4		16
S. Mississippi						1					1
S. Molade	2	2									4
S. Montevideo		66		2	3	9			33	11	124
S. Muenchen	2	10			1	7	1			1	22
S. Muenster		26		6		2			146	3	183
S. Muenster var. 15+, 34+									2		2
S. Newport	25	4	2	1	6	46			10	196	290
S. Ohio	3	21									24
S. Oranienburg	7	10	4	2	5	3		1		3	35
S. Orion	1	15				1			1		18
S. Orion var. 15+		5				1			1		7
S. Orion var. 15+, 34+		4				1			2		7
S. Oslo					1						1
S. Ouakam		2				1			2		5
S. Pakistan						1					1
S. Panama	1										1
S. Paratyphi B var. L(+) tartrate+	1		1							1	3
S. Pomona								1			1
S. Poona										1	1
S. Potsdam								1			1
S. Putten	3	1							1		5
S. Reading		1		4					44	2	51
S. Rubislaw	2	2				4				5	13
S. Ruiru		1									1
S. Saintpaul		7		1		3			51	1	63
S. Sandiego	1	1									2
S. Schwarzengrund		32							30		62
S. Senftenberg	12	146		8		16			459		641

TABLE 7

**Non-Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Non-Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. Soerenga		1							1		2
S. Tallahassee										1	1
S. Tennessee	17	6				1					24
S. Thompson	1	45				3	4		5	5	63
S. Typhimurium	13	95		4	5	38	5		2	124	286
S. Typhimurium var. 5-	15	44	2		4	166	22		37	230	520
S. Uganda		1				1			4	1	7
S. Uganda var. 15+		4									4
S. Urbana									1		1
S. Virginia		6							1		7
S. Westhampton		2							1		3
S. Westhampton var. 15+									2		2
S. Widemarsh		2									2
S. Worthington		41				5			9		55
S. I 3,10:e,h:-	1									1	2
S. I 3,15,34:z10:-		1									1
S. I 4,12:l,v:-		1							1		2
S. I 4,[5],12:-:1,2						3					3
S. I 4,[5],12:d:-									1	1	2
S. I 4,[5],12:i:-		16		1	1	1			10	2	31
S. I 6,7:-:1,5		1							1		2
S. I 6,7:e,h:-	2										2
S. I 6,7:k:-		4									4
S. I 6,7:z10:-	1					1			1		3
S. I 6,8:-:1,2										1	1
S. I 6,8:d:-		1									1
S. I 6,8:z10:-						9			1		10
S. I 8,(20):-:z6		4							7		11
S. II 58:a:z6						1					1
S. IIIa 18:z4,z23:-									6		6
S. IIIa 18:z4,z32:-	1					2			6		9
S. IIIa 21:g,z51:-										10	10
S. IIIa 40:z4,z24:-		1									1
S. IIIa 44:z4,z23:-										1	1
S. IIIa 48:g,z51:-										1	1
S. IIIa 51:g,z51:-						1					1
S. IIIb 16:z10:e,n,x,z15	1				1						2
S. IIIb 47:k:z53					1						1
S. IIIb 50:k:e,n,x,z15										1	1
S. IIIb 50:k:z					2						2
S. IIIb 53:z10:z35										1	1
S. IIIb 58:l,v:z35					1						1
S. IIIb 58:z52:z35					1						1

TABLE 7

**Non-Clinical Salmonella isolates from Nonhuman sources
Reported to CDC and NSVL by Serotype and Source, 2003**

Serotype	Non-Clinical Nonhuman Source										Total
	Bovine	Chicken	Equine	Feed/Feed Supplements	Other Birds /Wild Animals	Other Domestic Animals /Environment	Porcine	Reptile	Turkey	All Others	
S. IIIb 60:z10:z								1			1
S. IIIb 61:c:z35					1						1
S. IIIb 61:k:z35					1						1
S. IIIb 65:k:z										1	1
S. IV 16:z4,z32:-										1	1
S. IV 40:z4,z32:-					1						1
S. IV 43:z4,z23:-								1			1
S. IV 44:z4,z32:-								1			1
S. IV 50:z4,z23:-								1			1
Rough or nonmotile isolates	1	5				1			3	11	21
Total	220	2038	10	55	78	633	85	9	1866	682	5676

TABLE 8

**The Top 20 most frequently reported *Salmonella* serotypes from Human sources
Percent Change in reported isolates**

Rank			Serotype	Reported Isolates			Percent Change		
1993	1998	2003		1993	1998	2003	1993-1998	1998-2003	1993-2003
1	1	1	S. Typhimurium *	8743	8818	6655	1	-25	-24
2	2	2	S. Enteritidis	8071	6029	4890	-25	-19	-39
4	3	3	S. Newport	1487	2272	3865	53	70	160
3	4	4	S. Heidelberg	2457	1900	1812	-23	-5	-26
9	5	5	S. Javiana	641	1167	1659	82	42	159
6	7	6	S. Montevideo	789	828	857	5	4	9
16	14	7	S. Saintpaul	380	479	839	26	75	121
7	9	8	S. Muenchen	657	639	783	-3	23	19
12	8	9	S. Oranienburg	522	693	557	33	-20	7
11	10	10	S. Infantis	568	600	539	6	-10	-5
15	13	11	S. Braenderup	381	497	530	30	7	39
8	6	12	S. Agona	651	991	512	52	-48	-21
10	11	13	S. Thompson	576	571	494	-1	-13	-14
	66	14	S. I 4,[5],12:i:-		34	489		1338	
27	17	15	S. Mississippi	156	314	438	101	39	181
13	15	16	S. Typhi	472	382	361	-19	-5	-24
22	18	17	S. Paratyphi B var. L(+) tartrate+	176	248	331	41	33	88
5	12	18	S. Hadar	1298	544	280	-58	-49	-78
34	23	19	S. Bareilly	105	153	234	46	53	123
28	19	20	S. Stanley	143	193	224	35	16	57

NOTE:

* Typhimurium includes var. 5- (Formerly var. Copenhagen)

Figure 3

S. Enteritidis isolation rates per 100,000 population by region: 1970-2003

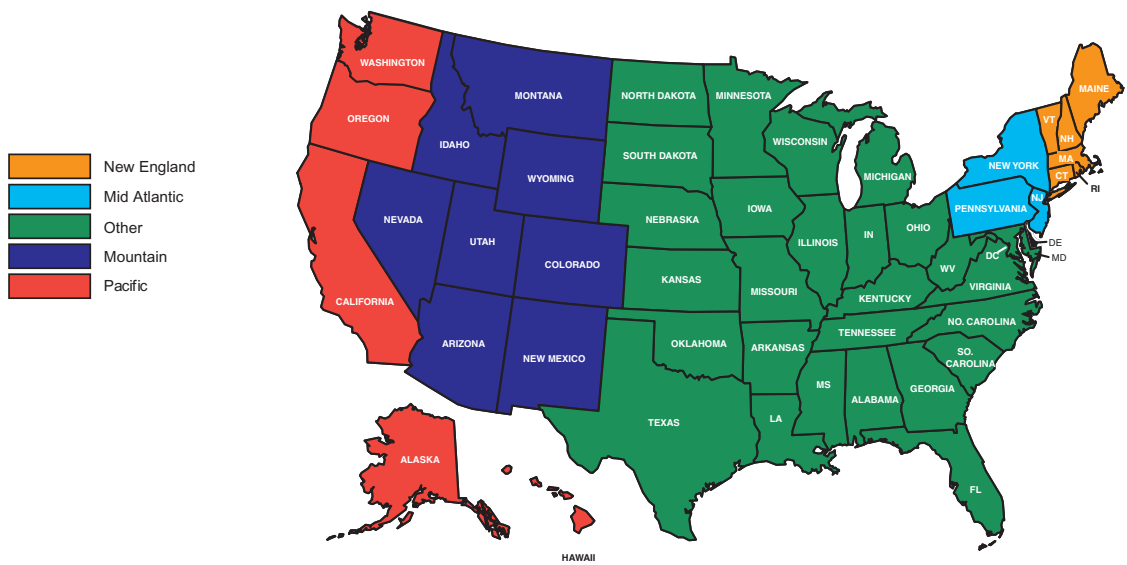
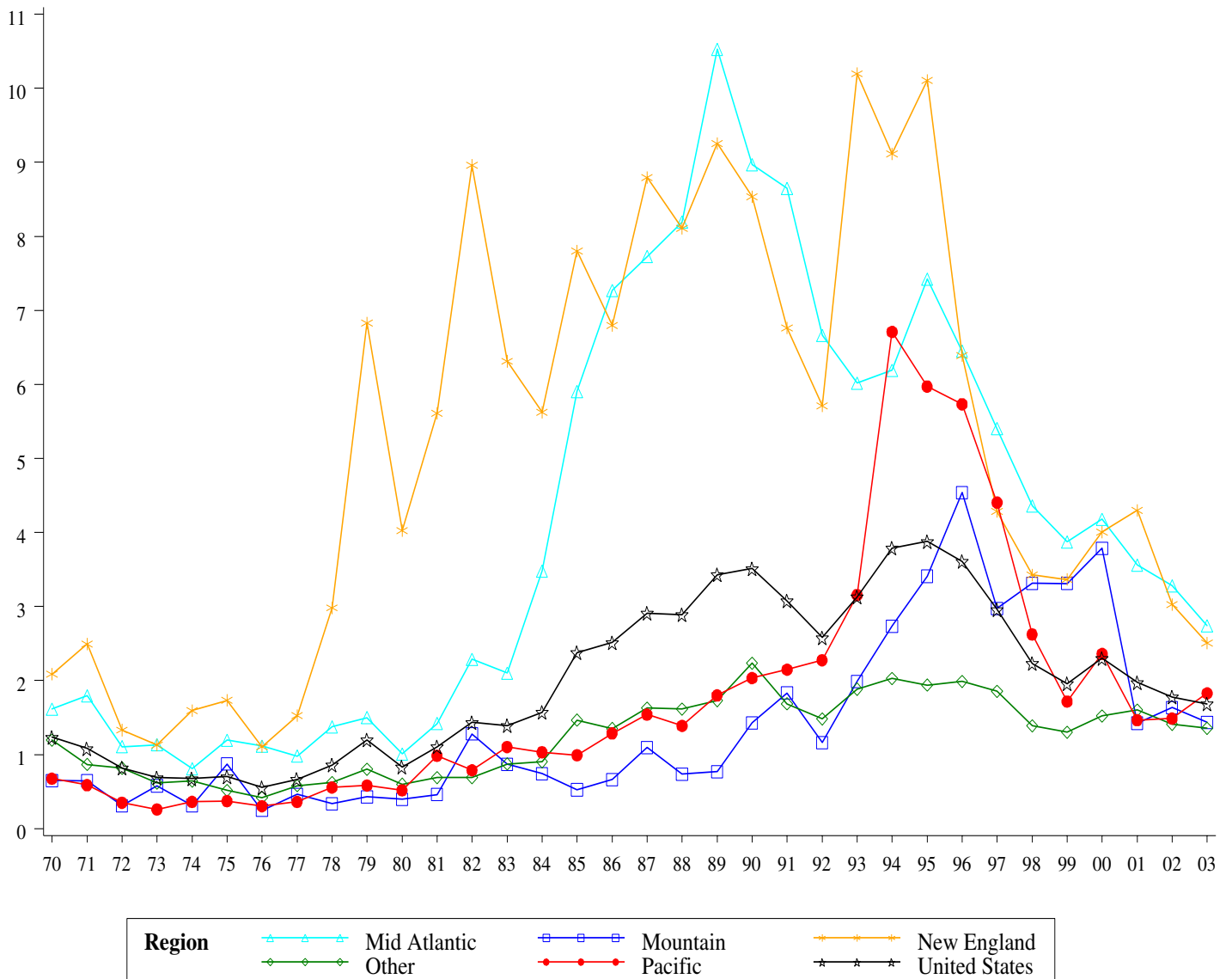


Figure 4

Top 4 *Salmonella* Serotype isolation rates in the United States per 100,000 population: 1970-2003

