NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS. . .

Annual Summary 1966

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE
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I. INTRODUCTION

This report summarizes the results of the fourth year (January 1, 1966 - December 31, 1966) of the Salmonella Surveillance Program jointly established by the National Communicable Disease Center (NCDC) and the Association of State and Territorial Epidemiologists and Laboratory Directors. The bulwark of the program is the weekly reporting of isolations of salmonellae submitted by all fifty states, the District of Columbia, the Salmonella Reference Center-Beth Israel Hospital, New York City, the U.S. Department of Agriculture, the National Animal Disease Laboratory, Ames, Iowa, and the U.S. Food and Drug Administration.

II. MATERIALS AND METHODS

The data analyzed are derived from two sources: the Morbidity and Mortality Analysis Unit (1942-1966 Morbidity and Mortality Weekly Report (MMWR) Annual Supplements) and the Salmonellosis Unit. The data from the first source (MMWR) include cases of salmonellosis diagnosed clinically and reported as typhoid fever or salmonellosis exclusive of typhoid fever in periodic reports from the states. The cases are not necessarily bacteriologically confirmed. In contrast, the data collected by the Salmonellosis Unit represent state laboratory identifications of salmonellae, without distinction as to whether the isolate came from a clinical case or a carrier.

Interpretations are limited by the bias inherent in the data analyzed. For example, geographical prevalence and age of patients reflect "interest factors." Additionally, such factors as seriousness of disease and a lack of adequate laboratory facilities in some areas have an influence on the results presented.

Despite the limitations, certain observations are justified, and the data herein provide the basis for comparison with past and future results.

III. SUMMARY

During 1966, 20,040 isolations of salmonellae from humans were reported, representing a 3.9 percent decrease from the 20,865 reported for 1965 and a 5.1 percent decrease from the 21,113 reported in 1964. Salmonella typhi-murium and S. typhi-murium var. copenhagen, as in previous years, were the most common serotypes, accounting together for almost one third of all isolations.

A total of 7,709 recoveries of salmonellae from nonhuman sources were reported during 1966, an increase of 12.8 percent over 1965 and 41.2 percent over 1964. This increase probably reflects an increasing interest in surveillance of nonhuman reservoirs of salmonellae.

IV. REPORTS FROM THE STATES

A. HUMAN

Incidence

The incidence of reported human salmonellosis (other than typhoid fever) in the United States increased strikingly between 1942 and 1964 (Figure 1). Since 1964, however, the incidence has been essentially constant (Figure 2).

Figure 1 compares the incidence of salmonellosis in the United States with typhoid fever. As can be seen, the incidence of typhoid fever has been decreasing since 1942, in contrast to salmonellosis due to all other serotypes.

The seasonal distribution of salmonella isolations from humans from 1963 through 1966 is shown in Figure 3. A consistent seasonal pattern is apparent with the greatest number of isolations being reported from July through October for each year. The lowest number of isolations are reported from January to May.

Serotype Frequency

A total of 153 different salmonella serotypes were reported in 1966, representing an increase of 7 serotypes (5 percent) over 1965 (Tables I and II). This number (153) accounted for approximately 12 percent of the estimated 1200 known salmonella serotypes.

The 10 most frequently reported serotypes appear in Table III. These 10 serotypes accounted for 14,392 (71.8 percent) of the 20,040 isolates reported during 1966. As in previous years, S. typhi-murium and S. typhi-murium var. copenhagen together were the most frequently reported serotypes during 1966 and represented 29.6 percent of all isolations. These serotypes were also the most frequently reported serotypes for each month of 1966. Salmonella heidelberg, the second most frequently reported serotype, accounted for 8.1 percent of the total isolations.

Table III also demonstrates the close correlation between human and nonhuman sources of salmonellae, with 5 serotypes appearing on both lists. The similarities, taking into consideration that the data are not wholly comparable, confirm the importance of the nonhuman reservoirs of salmonellae in the epidemiology of human salmonellosis.

Geographic Patterns

The geographic distribution of salmonella isolations reported during 1966 appears in Figure 4. New York reported the largest number, 2,174, followed by California with 1,920. Other states reporting over 1,000 isolations were Massachusetts, Illinois, and Florida.

The incidence of salmonella infection for the entire country was 10.2 per 100,000. Hawaii, as in past years, reported the highest incidence with 75.5 per 100,000. Other areas reporting incidence rates higher than 20 per 100,000 were Massachusetts, New Mexico, Louisiana, and the District of Columbia.

Geographic variations among specific serotypes are seen in Tables I and II. Several serotypes had definite regional patterns, which had been observed in previous years. This is especially true in Hawaii, which accounted for only 2.7 percent of national salmonella isolations but reported 98 percent (44 of 45) of all S. weltevreden recoveries, 81 percent (21 of 26) of S. oslo isolates, 43 percent (19 of 44) of S. worthington isolations, and 42 percent (13 of 31) of S. livingstone recoveries. Other regional patterns were seen with S. javiana, which had 67 percent of the 312 isolations reported from three Gulf states, Texas, Florida, and Louisiana; S. miami, which, appropriately enough, had 66 percent of its isolations in Florida; and S. saphra, which had all 13 national isolations recorded from Texas, continuing a trend first noted in 1965.

Outbreaks

In 1966, 24 salmonella outbreaks involving 2,317 individuals were investigated and reported in the Salmonella Surveillance Reports. Considering the annual total of reported isolations, 20,040, these reported outbreaks obviously represent only a small fraction of actual outbreaks occurring.

Of the 24 outbreaks reported, 16 were traced to a causative agent: 6 involved contaminated egg products, 2 were traced to contaminated poultry, and 3 involved contaminated milk; carmine dye, smoked whitefish, headcheese, a human carrier, and multiple

food items each accounted for 1 outbreak. In 8 outbreaks, no definite source could be determined. Vehicles involved demonstrate the importance of animal reservoirs and food transmission in the epidemiology of salmonellosis and give direction to control measures needed.

Seven of the epidemics occurred in hospitals, involving 1,297 patients and including at least 7 deaths. Thus, over one half of those involved in the reported outbreaks were hospital patients, reemphasizing the problem of hospital-acquired salmonellosis.

Outbreaks Reported in Salmonella Surveillance Reports in 1966

Vehicle of Infection	Serotype	No. of Cases	Location
Eggs and egg products	S. heidelberg, S. siegburg, & S. tennessee	4	Family
	S. thompson	13	Family
	S. enteritidis	41	Mental hospital
	S. blockley	167	Hospital
	S. enteritidis	40	Hospital
	S. saint-paul	103	Bakery
Poultry	S. heidelberg	250	Banquet
	S. typhi-murium	107	Supermarket
Raw milk	S. typhi-murium	2	Family
	S. typhi-murium	11	Family
Powdered milk	S. new-brunswick	30	Interstate
Carmine dye	S. cubana	31	Hospitals
Smoked whitefish	S. java	300	Interstate
Headcheese	S. cambridge & S. typhi-murium	3	Families
Human carrier	S. newport	18	Baby-sitters
Multiple food items	multiple	67	Banquet
Vehicle of infection unknown	S. enteritidis	54	Restaurants
	S. thompson	13	Hospital nursery
	S. typhi-murium	25	College dormitory
	S. heidelberg	5	Newborn nursery
	S. infantis	11	Restaurant
	S. blockley	6	Family
	S. reading	16	Orphanage
	S. typhi-murium	1000	Mental hospital

TOTALS: Outbreaks (24) Serotypes (14) Cases (2317)

Age and Sex Distribution

Of the 19,589 individuals for whom sex was reported during 1966, 9,643 (50.8 percent) were males, and 9,846 (49.2 percent) were females (Table IV). Although generally there appears to be no sex predilection, it is interesting to note that for the age groups under 20 years, there is a significant preponderance of males and the opposite is true for age groups over 20 years. The same distribution has been seen for the past 3 years in annual summary data. This is illustrated in the following table:

Age (Years)	Male		Female		Total
	Number	Percent	Number	Percent	
Less than 20	4,824	53.7	4,155	46.3	8,979
20 and over	1,900	40.7	2,765	59.3	4,665
Total	6,724	49.3	6,920	50.7	13,644

(Unknown and unspecified ages not included)

Of the 13,736 individuals reported by age during 1966, 9,043 (65.8 percent) were less than 20 years of age. This is almost the same proportion as in 1965. Figure 5 demonstrates the number of isolations per 100,000 in various age groups for 1966. This pattern closely approximates those for 1963, 1964, and 1965. However, the rates in the age groups less than 10 appeared to have been increasing over the past 4 years. This is particularly true in the less than 1 year age groups where the rates per 100,000 have been 43, 53, 63, and 69, respectively, for the years 1963 through 1966.

Mortality

During 1966, 69 deaths associated with salmonella infections were reported. The death to "case" ratio was 0.39 percent, which is similar to 1965 and 1964 (0.32 and 0.34 percent, respectively). This is not a true reflection of the mortality rate due to salmonellosis in this country because (1) reporting officials do not always have access to information concerning the clinical courses of patients' illnesses and (2) it is probable that, in some areas, isolates are reported prior to death and the deaths are then not identified as associated with salmonellosis.

Family Related Isolations

Of the 20,040 persons reported as harboring salmonellae during 1966, 4,306 (21.0 percent) also had other members of their families positive for salmonellae. This is similar to the rates for 1964 and 1965 (21.4 and 21.9 percent, respectively).

Uncommon and Rare Serotypes

Table II lists 109 serotypes which are classified as uncommon or rare. Seventy-four serotypes, representing 48 percent of the 153 reported types had 5 or less isolations each, accounting for only 139 (0.7 percent) of the 20,040 isolations reported during 1966.

B. NONHUMAN

During 1966, 7,709 salmonella isolations from nonhuman sources were reported. This represents a 12.8 percent increase over the 6,834 isolations reported in 1965 (Figure 7). The number of nonhuman isolations has increased each year since 1963, but this probably reflects increasing surveillance. The sources of these isolations are given in Figure 6 and Table V. The number and percent of isolations by source demonstrate the importance of domestic and wild fowl, which accounted for 44.8 percent of salmonella isolations reported from nonhuman sources in 1966 (Figure 6). During the first 3 years of salmonella surveillance, 1963-1965, domestic and wild fowl accounted for more than 50 percent of all nonhuman isolations. Swine, cattle, and other animals accounted for 16 percent of all nonhuman recoveries reported in 1966. The percentage of isolations from these sources has been decreasing since 1963, when almost 30 percent of nonhuman isolations were from swine, cattle, and other animals. The percentage of isolations from human foods (primarily eggs and egg products) has remained about the same in 1966. During 1966 an interstate outbreak of gastroenteritis due to S. newbrunswick was identified and traced to dried milk. This outbreak stimulated intensive surveillance of dried milk products by industry, state, and federal agencies. Isolations from dried milk products accounted for 3.5 percent of the nonhuman isolations in 1966.

Isolations from animal feedstuffs accounted for 16.4 percent during 1966. This represents almost a threefold increase over previous years and reflects continued and increased interest in the surveillance of animal feeds.

Of particular interest was the finding of salmonellae in carmine dye and in glandular products of animal origin which are destined for medicinal use.

The geographic distribution of serotypes isolated from nonhuman sources appears in Figure 8 and Table VI. Isolations were reported from all states except Nevada and Maine. California reported 1,303 isolations for the largest number, followed by Louisiana with 917 and Minnesota with 828. Geographic concentrations of isolations are thought to reflect interest factors in the various states rather than prevalence. For example, Indiana and Minnesota had plants involved in the S. new-brunswick-dried milk outbreak and thus reported large numbers of isolates of that serotype from their investigations of those plants. Thus, no valid conclusions can be drawn from the geographic distribution of individual serotypes with the possible exceptions of S. dublin, which continues to be restricted to the far western states, and S. javiana, which is localized in the Gulf states, paralleling the distribution of human isolations of that serotype.

The 10 most common salmonella serotypes isolated from nonhuman sources during 1966 are listed in Table III. These 10 serotypes comprised 62 percent of all nonhuman isolates (59.1 percent in 1965).

Sources

Domestic and Wild Fowl and Their Products

During 1966 there were 3,455 (44.8 percent) isolations from domestic and wild fowl and 409 (5.3 percent) isolations from eggs and egg products. Comparable 1965 totals were 3,842 (56.2 percent) and 500 (7.3 percent) isolations, respectively.

The 5 most common serotypes isolated from eggs and egg products in order of decreasing frequency were S. infantis (12.0 percent), S. montevideo (12.0 percent), S. heidelberg (11.3 percent), S. siegburg (6.1 percent), and S. oranienburg (5.6 percent).

The 5 most commonly isolated serotypes from chickens and turkeys are shown in Table VIII. Salmonella heidelberg continues to be the number one serotype isolated from turkeys with 458 (24.7 percent) isolations.

Domestic and Wild Animals

During 1966 there were 1,227 (16 percent) isolates reported from domestic and wild animals as compared to 1,010 (14.8 percent) reported during 1965. The 5 most common serotypes isolated from swine and cattle in 1966 are shown in Table VIII. Swine accounted for more isolations than cattle in 1966, and this is in part a reflection of epidemiological studies on swine in Louisiana. The most common serotype isolated from swine in 1966 was S. derby (16.4 percent). Salmonella cholerae-suis var. kunzendorf accounted for only 14.9 percent of the isolations from swine in 1966 as compared to 40 percent in 1965.

In 1966, 61.7 percent of all isolations of cattle were S. typhi-murium or S. typhi-murium var. copenhagen. The next 2 most common serotypes from cattle were S. dublin, a host-adapted serotype, with 10.4 percent, and S. newport with 7.2 percent. The combination of these 3 serotypes accounted for over 80 percent of all isolations of salmonellae from cattle.

Dried Milk

That dried milk may be of substantial importance in the transmission of salmonellosis to humans is evidenced by its association with outbreaks of human disease and the isolations of multiple serotypes from the products and environment of several plants in the United States (See SSR #53, 55, 57). Dried milk accounted for 271 (3.5 percent) of isolations from nonhuman sources in 1966. No isolations of salmonellae from this source had been reported in this country prior to 1966. The 5 most common serotypes found in dried milk were S. new-brunswick (29.6 percent), S. tennessee (15.9 percent), S. cubana (13.3 percent), S. montevideo (7.1 percent), and S. binza (6.3 percent).

Animal Feed and Feed Ingredients

During 1966, there were 1,274 (16.5 percent) salmonella isolations reported from animal feed and feed ingredients as compared with 367 (5.4 percent) isolations during 1965. This sharp increase represents the continued and increased surveillance of animal feedstuffs in the United States for the presence of salmonellae. Much of this increase represents data obtained in a rendering plant survey by the U.S. Department of Agriculture, increased animal feed surveillance in the states, and sampling of animal feedstuffs destined for interstate shipment by the U.S. Food and Drug Administration. The most common serotypes isolated from animal feeds were S. eimsbuettel (9.8 percent), S. montevideo (9.0 percent), S. senftenberg (6.4 percent), S. anatum (5.3 percent), and S. livingstone (5.0 percent). As judged by these results, animal and poultry by-product feed ingredients remain the chief source of contamination of animal feeds. Of 321 contaminated animal feeds that were identified in 1966, 314 (98.0 percent) were from animal or poultry by-product feed ingredients. Only 7 (2.0 percent) were from vegetable protein supplements, indicative of the small but persistent problem of salmonella contamination of products such as cottonseed meal and soybean meal.

Miscellaneous

Cold-blooded vertebrates, particularly pet turtles, continued to receive attention in 1966 as carriers of salmonellae. This is evidenced by the 141 isolations of salmonellae from turtles. The most common serotype was S. oranienburg, which accounted for 40.3 percent of all turtle isolations.

Of particular interest was the finding of salmonellae in carmine dye used for diagnostic studies in hospitalized patients and animal glandular products for medicinal use. All 90 isolations reported from carmine dye were S. cubana. During 1966, 114 isolations were reported from animal glandular substances. The most common serotypes reported from these products were S. anatum (29.9 percent), S. newport (16.7 percent), S. derby (10.5 percent), and S. bareilly (7.9 percent).

Human infections with S. cubana were traced to carmine dye in 1966. In contrast, animal glandular products have not, to date, been reported in association with human disease.

Rare Serotypes

Table VII lists 46 serotypes classified as rare which were isolated from nonhuman sources. The most common nonhuman sources of rare salmonella serotypes were animal feeds and ingredients, accounting for 26 (44.1 percent) of the 59 isolations. Several nonhuman isolations were made in states recording human recoveries of the same rare serotypes. This pattern was seen in Ohio with S. oslo, in Illinois with S. abortus-bovis, in Maryland with S. albany, and in New Jersey with S. bradford.

V. FOOD AND FEED SURVEILLANCE

Beginning in March 1966, the Food and Feed Surveillance Laboratory of the Veterinary Public Health Laboratory Unit established a food and feed sampling program for the detection of salmonellae, other enteric pathogens, and staphylococci. The program was conducted with the cooperation of the health departments of New York City, Michigan, Colorado, Florida, New Mexico, North Carolina, Louisiana, Illinois, Virginia, and Washington. Each month, samples of specified food and feed items were submitted for examination. Selection of products were made on the basis of those frequently involved in outbreaks of human salmonellosis and new or suspect items. Findings were reported monthly in the Salmonella Surveillance Reports. Foods yielding salmonella were ready-to-eat meats, 1.2 percent; raw meats, 4.3 percent; and foods containing red food coloring, 0.6 percent; whereas, nonfat dry milk, cocoa products, and cake mixes were negative. Salmonellae were isolated from mixed feeds, 2.4 percent, and calf starter, 2.3 percent; but no salmonellae were isolated from 177 samples of milk replacer for calves.

Product	SSR Reference (Issue)	No. Samples	Positive		Serotype Isolated
			No.	Percent	
Nonfat dry milk	49, 50, 51, 52	198	0	0.0	
Ready-to-eat meat	49, 51, 54, 55	342	4	1.2*	2-S. typhi-murium var. copenhagen 1-S. anatum 1-S. infantis
Raw meat**	51, 54, 55	185	8	4.3	2-S. derby 2-S. anatum 1-S. muenster 1-S. javiana 1-S. heidelberg 1-S. newport
Cocoa drink products	52	191	0	0.0	
Cake mixes	53, 54	206	0	0.0	
Foods with red coloring	55	176	1	0.6	S. cubana
Total Foods		1298	13	1.0	
Milk replacer for calves	50, 51	177	0	0.0	
Calf starter	50, 51	43	1	2.3	S. worthington
Mixed feeds	52	210	5	2.4	2-S. anatum 1-S. tennessee 1-S. typhi-murium 1-S. muenchen
Total Feeds		430	6	1.4	

*All positive samples were headcheese

**Beef, veal, bacon, and horse meat

Figure 1

REPORTED INCIDENCE OF HUMAN SALMONELLOSIS UNITED STATES, 1942 - 1966

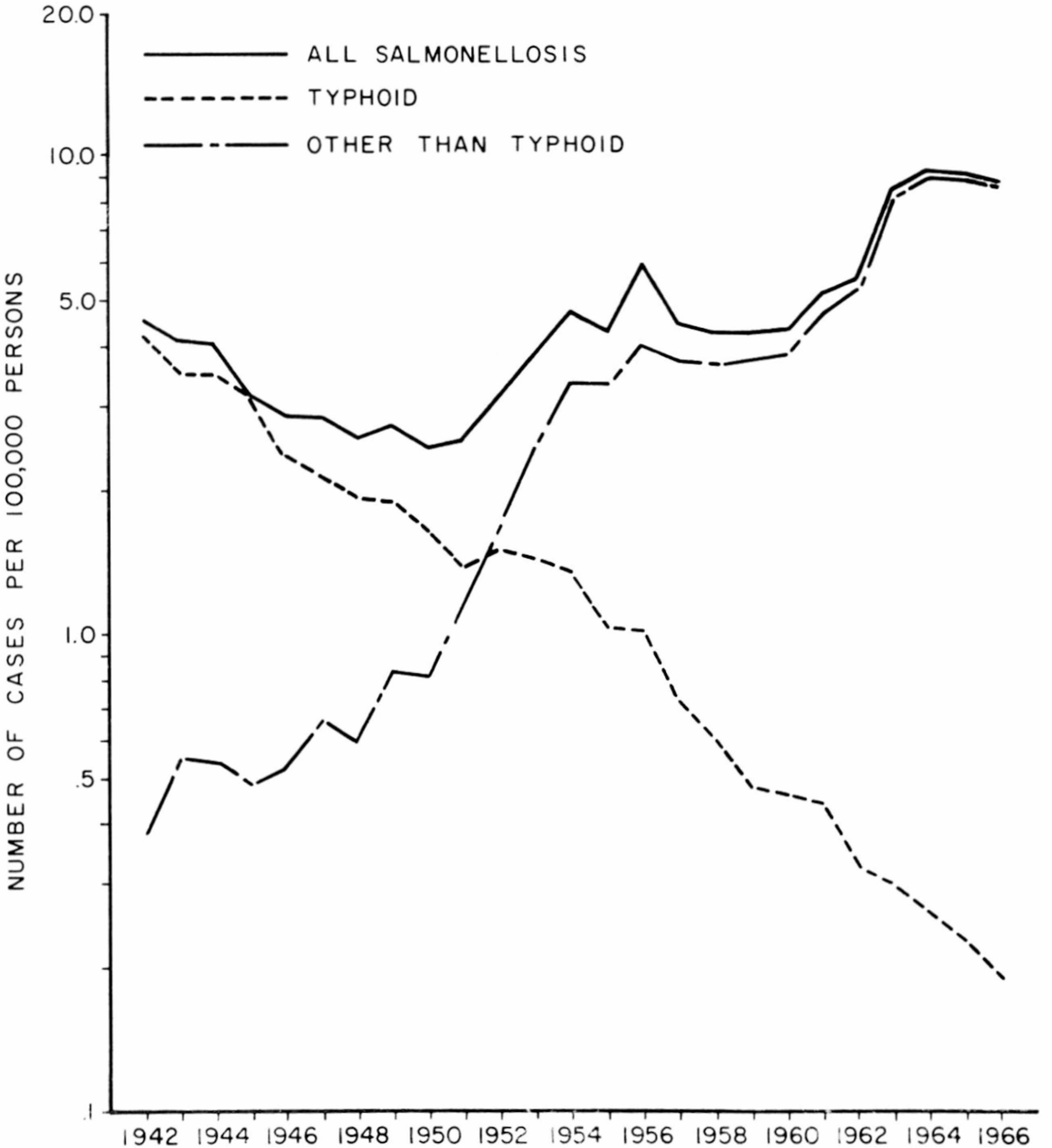


Figure 2

REPORTED HUMAN ISOLATIONS OF SALMONELLA
UNITED STATES, 1963 - 1966

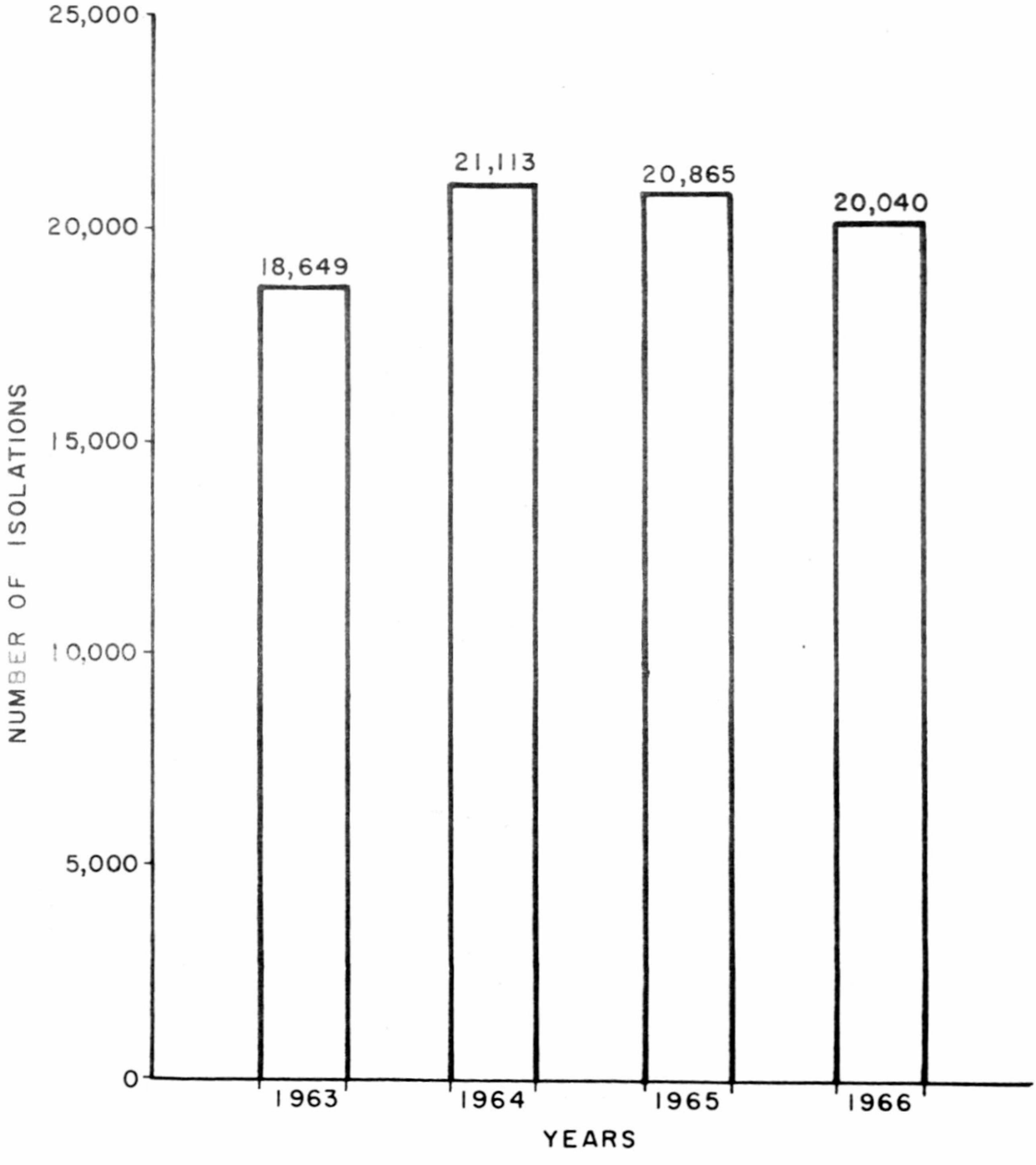


Figure 3.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE
IN THE UNITED STATES

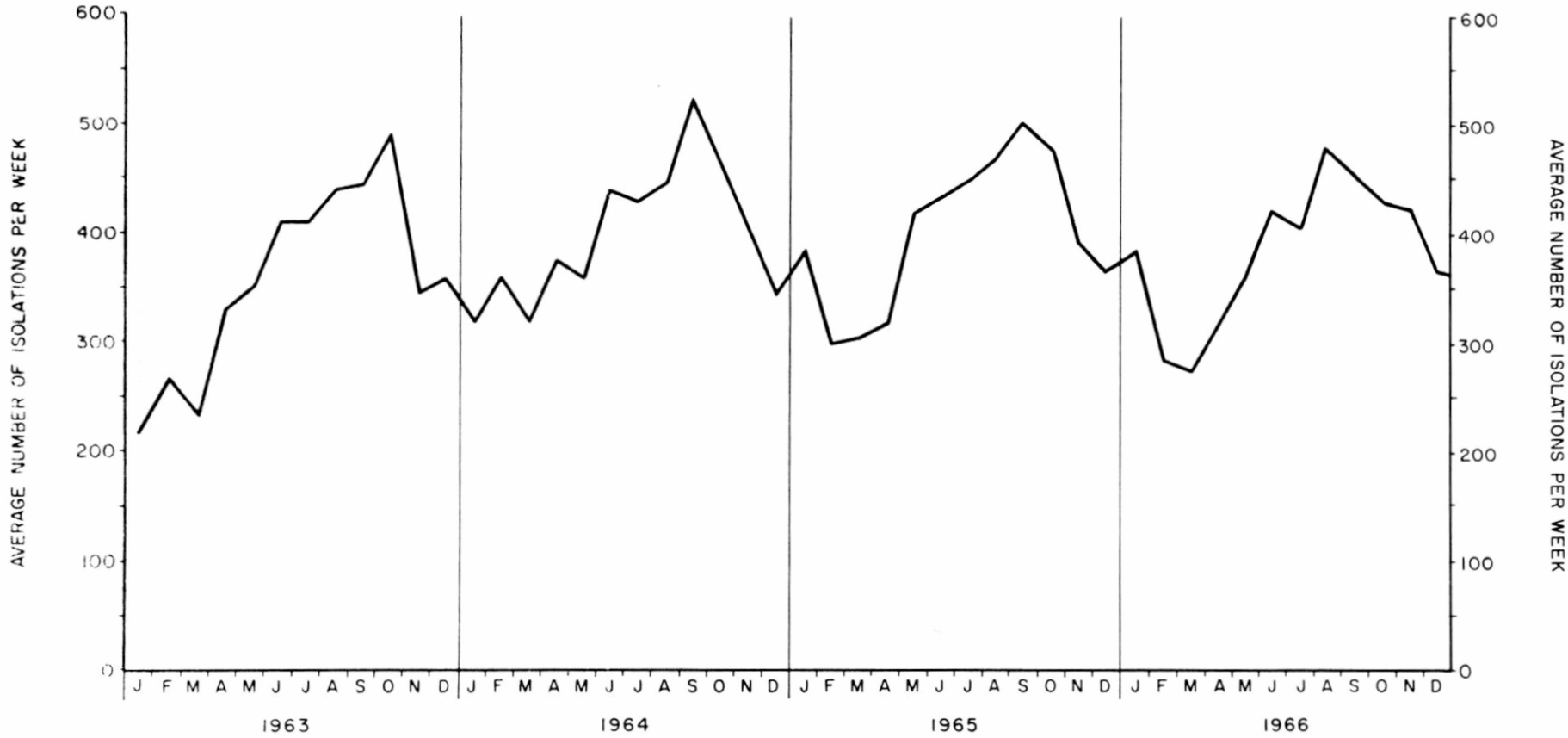
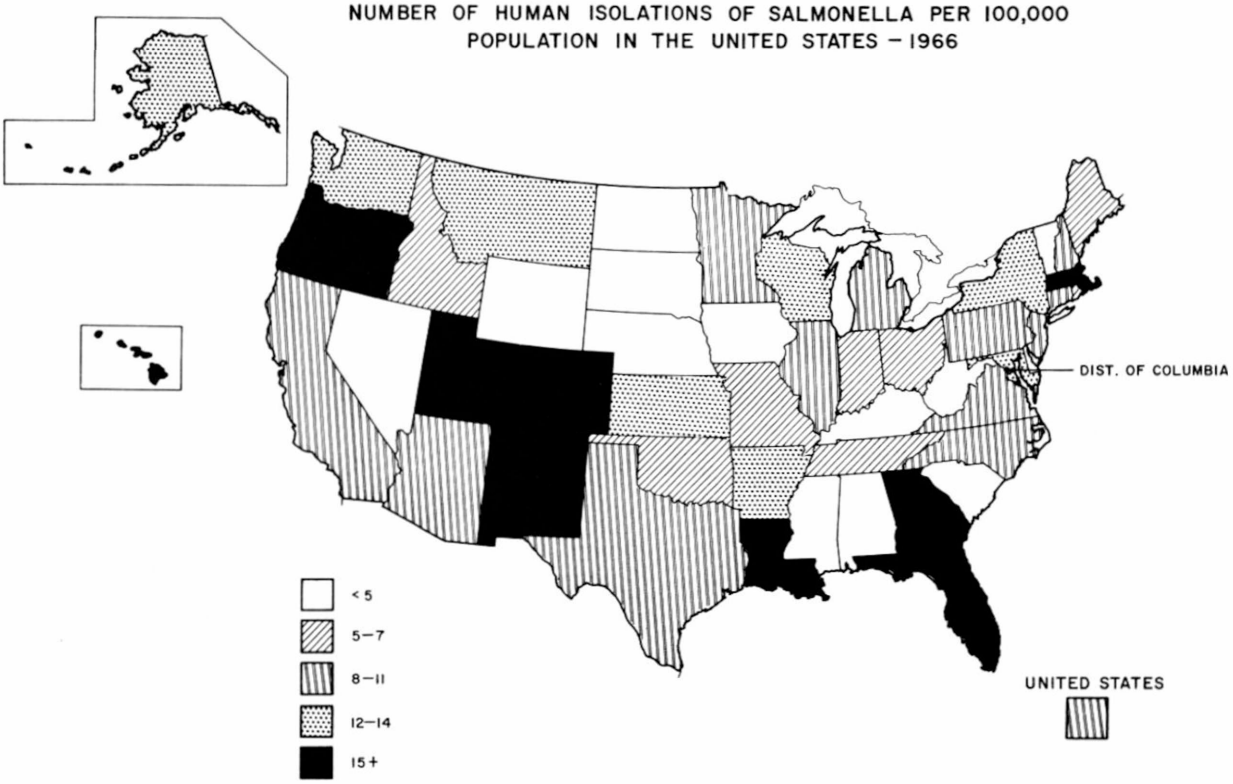


Figure 4.

NUMBER OF HUMAN ISOLATIONS OF SALMONELLA PER 100,000 POPULATION IN THE UNITED STATES – 1966



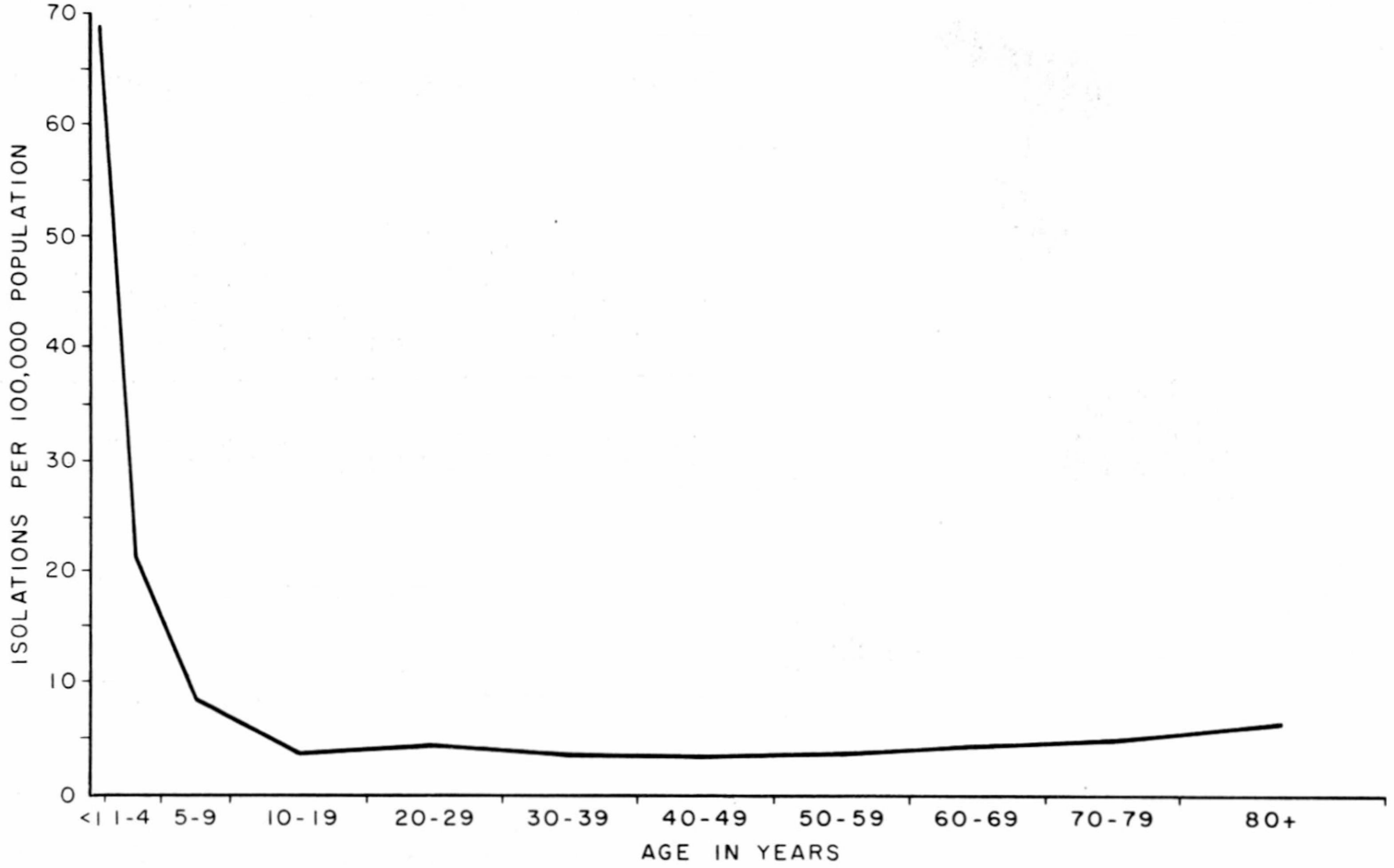
SOURCE: U.S. DEPARTMENT OF COMMERCE, CURRENT POPULATION REPORT'S SERIES A-25 NO. 348

State	Number of Isolations		Rate Per 100,000	State	Number of Isolations		Rate Per 100,000
Alabama	116	(–)	3.3	Montana	83	(+)	11.8
Alaska	32	(+)	11.8	Nebraska	11	(+)	0.8
Arizona	149	(–)	9.2	Nevada	18	(–)	4.0
Arkansas	274	(+)	14.0	New Hampshire	77	(+)	11.3
California	1,920	(–)	10.1	New Jersey	550	(+)	8.0
Colorado	330	(+)	16.7	New Mexico	249	(–)	24.4
Connecticut	326	(–)	11.3	New York	2,174	(+)	11.9
Delaware	60	(–)	11.7	North Carolina	398	(–)	8.0
Dist. of Col.	172	(–)	21.3	North Dakota	26	N.C.	4.0
Florida	1,083	(–)	18.2	Ohio	506	(–)	4.9
Georgia	648	(–)	14.5	Oklahoma	156	(–)	6.3
Hawaii	542	(–)	75.5	Oregon	375	(+)	19.2
Idaho	47	(+)	6.8	Pennsylvania	886	(–)	7.6
Illinois	1,146	(+)	10.7	Rhode Island	65	(–)	7.2
Indiana	224	(–)	4.6	South Carolina	35	(–)	1.4
Iowa	118	(+)	4.3	South Dakota	17	(–)	2.5
Kansas	302	(–)	13.4	Tennessee	257	(–)	6.6
Kentucky	100	(+)	3.1	Texas	976	(+)	9.1
Louisiana	870	(–)	24.1	Utah	165	(+)	16.4
Maine	72	(+)	7.3	Vermont	16	(–)	4.0
Maryland	457	(–)	12.6	Virginia	348	(–)	7.7
Massachusetts	1,342	(+)	24.9	Washington	392	(–)	13.2
Michigan	794	(+)	9.5	West Virginia	35	(–)	2.0
Minnesota	294	(–)	8.2	Wisconsin	493	(+)	11.8
Mississippi	50	(–)	2.1	Wyoming	2	N.C.	0.6
Missouri	262	(–)	5.8	TOTALS	20,040	(–4.0%)	10.2

(+) Increase over 1965 (–) Decrease from 1965

Figure 5

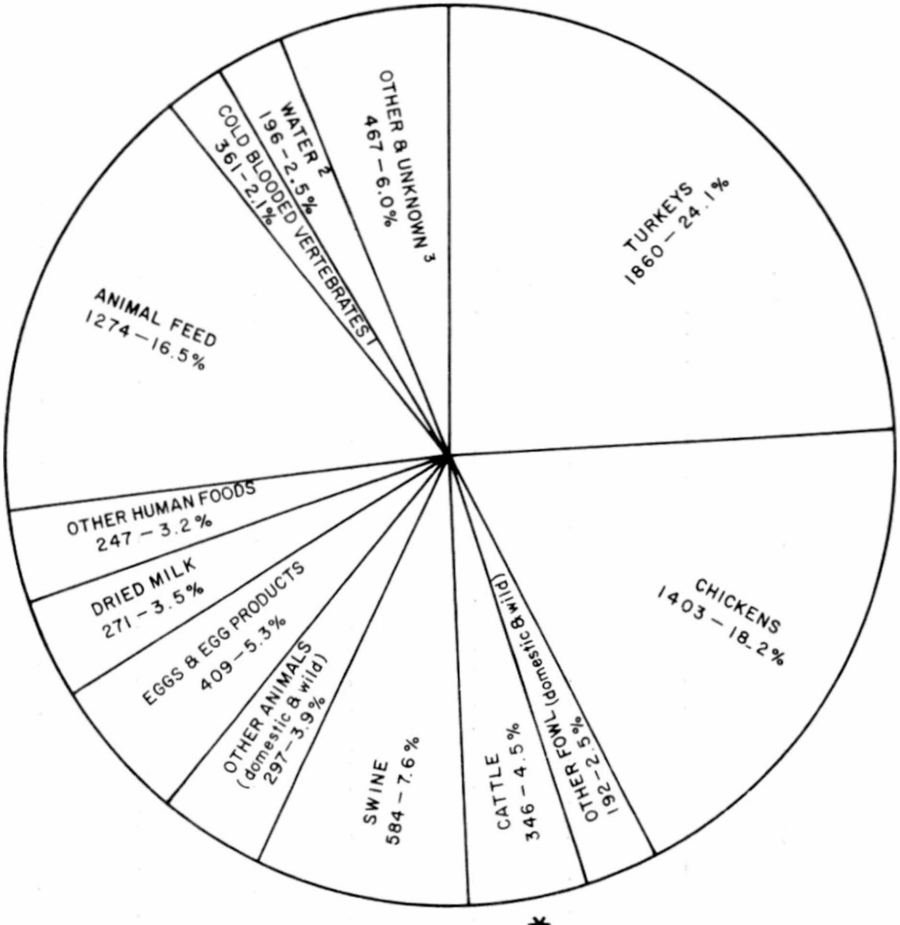
RATE OF HUMAN ISOLATIONS OF SALMONELLAE
BY AGE GROUP*
1966



* POPULATION DATA DERIVED FROM CURRENT POPULATION REPORTS, SERIES P-25, NO. 352, AND VITAL STATISTIC REPORT, VOL 15, NO. 12

Figure 6.

NUMBER AND PERCENT OF NONHUMAN SALMONELLA ISOLATIONS FROM THE INDICATED SOURCES IN THE UNITED STATES



1966 *

[1] INCLUDES 141 TURTLE ISOLATES
[2] INCLUDES 93 SEWAGE ISOLATES
[3] INCLUDES CARMINE DYE AND ANIMAL GLANDULAR PRODUCT ISOLATES

* PRELIMINARY DATA

Figure 7.

REPORTED NONHUMAN ISOLATIONS OF SALMONELLA
UNITED STATES, 1963 - 1966

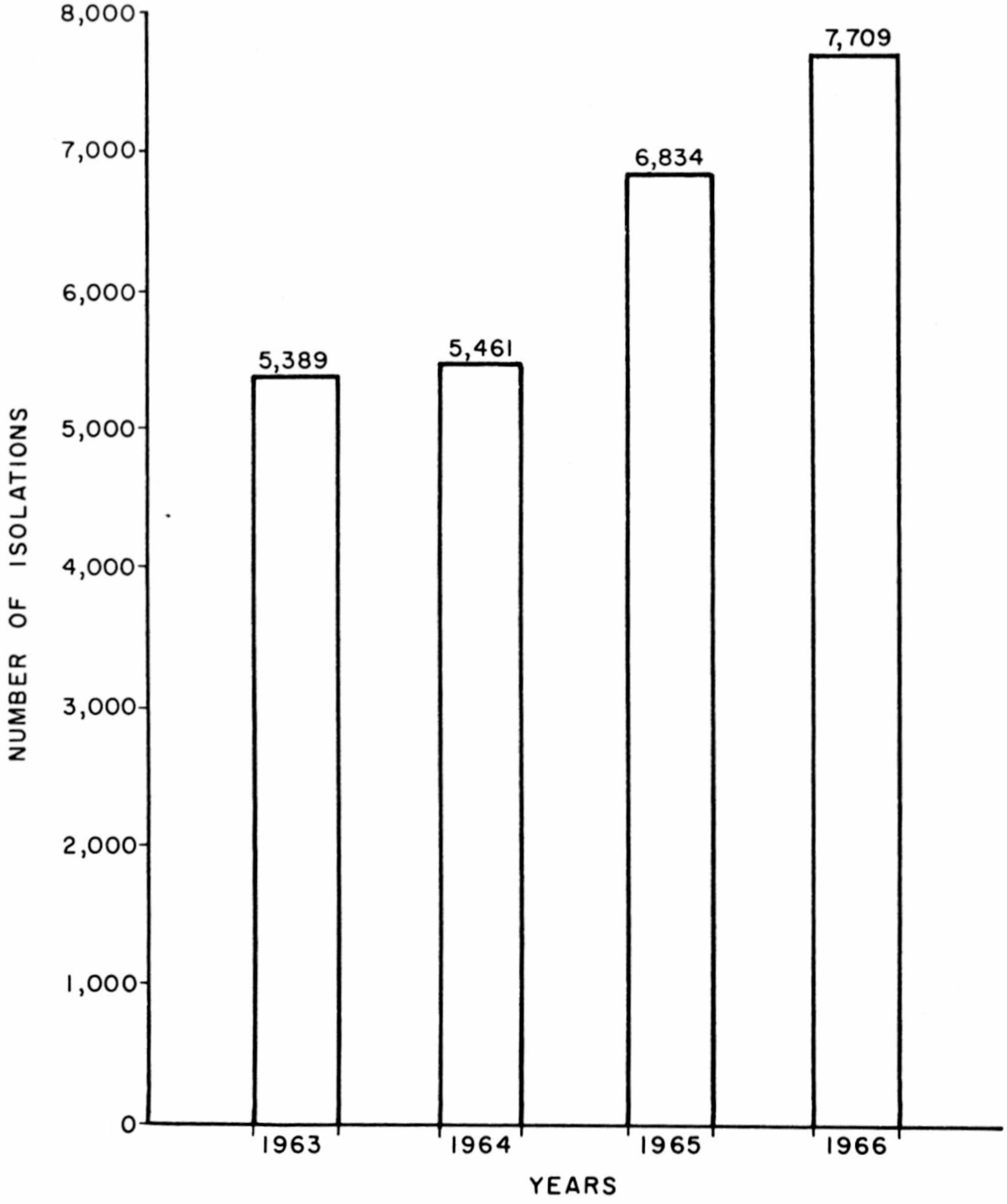


Figure 8

REPORTED ISOLATIONS OF SALMONELLA FROM NONHUMAN SOURCES IN THE UNITED STATES - 1966

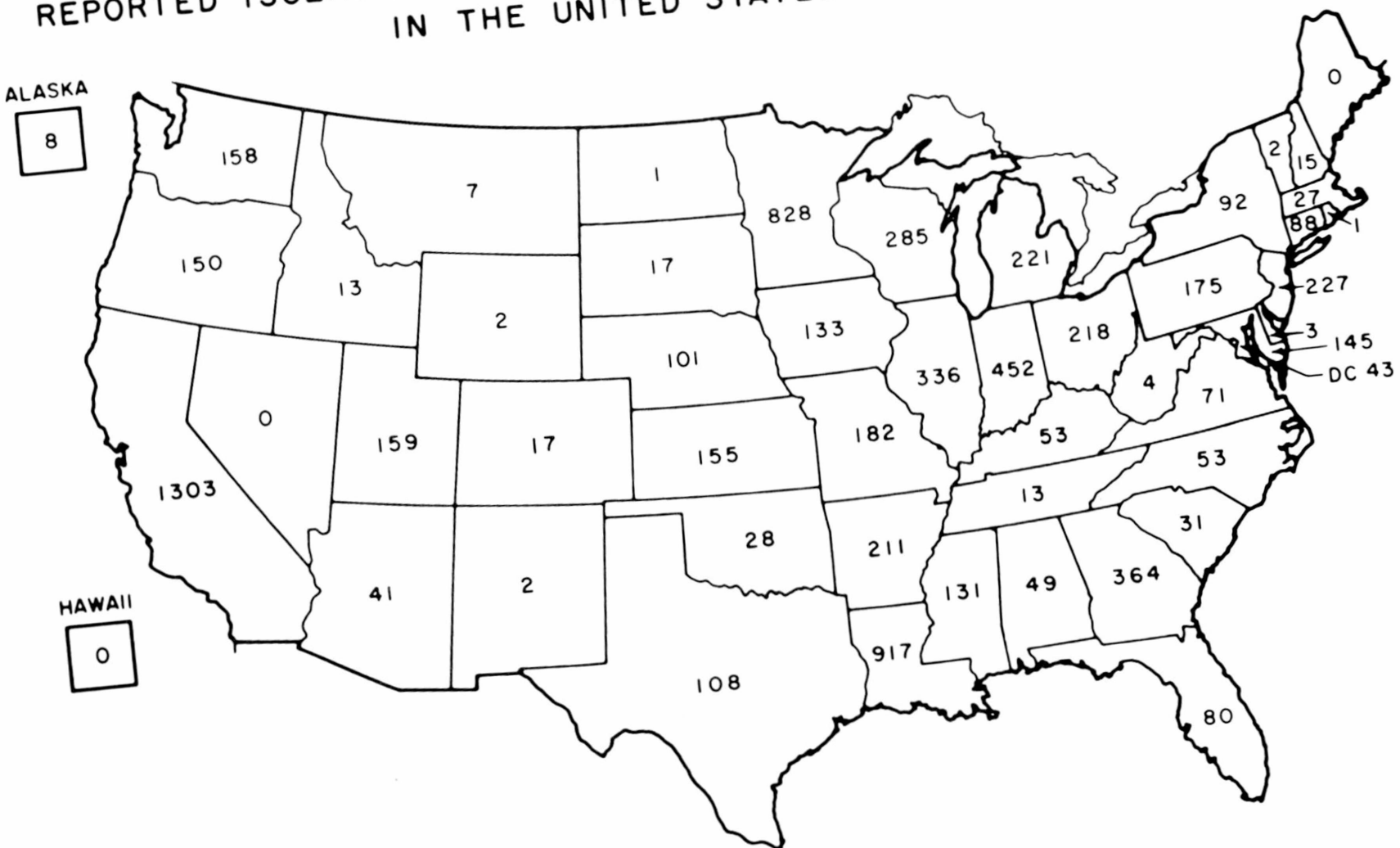


TABLE I

COMMON SALMONELLA SEROTYPES ISOLATED FROM HUMANS IN THE UNITED STATES DURING 1966

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																																	SEROTYPE
	NEW ENGLAND							MIDDLE ATLANTIC						EAST NORTH CENTRAL						WEST NORTH CENTRAL								SOUTH ATLANTIC								
	ME	NH	VT	MASS	RI	CONN	TOT	NY-A	NY-BI	NY-C	NJ	PA	TOT	OHIO	IND	ILL	MICH	WIS	TOT	MINN	IOWA	MO	ND	SD	NEBR	KAN	TOT	DEL	MD	DC	VA	WV	NC	SC	GA	FLA	TOT	
anatum				38		6	44	21	7	5	2	9	44	3	1	23	6	9	42	1	1	6	1			1	10		10		4		9		28	21	72	anatum
bareilly				2			2	2	4				6	4		2	2	2	10	1							1							16		2	6	24	bareilly
berta				2			2			3	3		6				3		3							3	3		6	1					4	11	berta
blockley	2			131	2	7	142	16	6	22	10	20	74	12	8	28	17	1	66	7	6	7			1	10	31	4	17	1	5		10		19	31	87	blockley
braenderup				17		6	23		5	6		2	13	7	1	8		5	21	3						9	12						8			1	9	braenderup
bredeney				8	2	4	14	2	7	2	3	2	16		1	9	3	2	15	1						1	2		1		2			4	2	9	bredeney
chester						3	3	1			4	5	10			11	14	4	29	11	1	3					15		8		3		4			2	17	chester
cholerae-suis v kun														1		2	3		6	1		1					2		1		2		2		4	5	14	cholerae-suis v kun
cubana				28	1		29	11	1		3	8	23	11	1	10	10	1	33	2					2	4	2	3		4		1		3	3	16	cubana
derby				50		2	52	19	13	22	3	36	93	9	1	20	17	11	58	3		2					5	5	17		9	1	10		12	6	60	derby
enteritidis				178		46	224	70	79	59	24	87	319	36	15	106	35	41	233	13	7	16		3		10	49	6	65	9	35	1	23	1	131	37	308	enteritidis
give				2			2	3			5	9	17	1		4	2	1	8							1	1		1			1	2		5	3	12	give
heidelberg	8			72		28	108	52	31	84	52	87	306	47	48	118	115	34	362	27	17	14	1	3	1	10	73	2	63	14	31	1	73	1	45	62	292	heidelberg
indiana								1	2	18	1	13	35	2	1	6	1	2	12										2				3		1	4	10	indiana
infantis		1	1	108	1	20	131	81	16	41	26	64	228	27	26	68	74	36	231	19	13	23	1			44	100	6	35	7	41		30		36	48	203	infantis
java				3		6	9	31	11	28	52	58	180		5	35	2	7	49	7		6				2	15		2				1		2	21	26	java
javiana				1		2	3	2			3	5	10			3	2		5			1				8	9		1				2		11	78	92	javiana
kentucky				2			2			1	2	4	7				1		1	5		1					6			1						2	3	kentucky
litchfield				4			4	3	5	8	5	2	23		1	8	5	8	22	1		2				2	5		1		4			1	8	14	litchfield
livingstone				1			1		1	2			3	2					2							1	1								1	1	livingstone
manhattan				5		1	6	6	1	9	3	11	30	2		10	12	7	31	5	2			3			10		3	1	4		4		1	2	15	manhattan
meleagridis											2	1	3																					1	1	2	meleagridis
miami				1			1		2	4			6			1	1		2			3				3					1			11	55	67	miami
mississippi																																			20	mississippi
montevideo				30	2	4	36	19	14	15	30	14	92	8	3	8	7	5	31	9	7	2					18	1	10	1	4	1	4		6	28	55	montevideo
muenchen				8		2	10	2	10	10	2	6	30	7		6	11	9	33	5		5				8	18		7		13		5		7	26	58	muenchen
newington				1			1	1		3	1	1	6			5	4	1	10	3							3		1	1					3	5	newington
newport	1			21	1	15	38	12	19	31	29	39	130	47	3	59	23	22	154	34	5	14		1	1	21	76	2	15	4	13	1	18		33	179	265	newport
oranienburg				30		3	33	19	2	13	12	17	63	15	5	18	22	11	71	4		12				31	47		1		4		3		14	33	55	oranienburg
panama	2			11	1	10	24	10	9	16	40	4	79	9	3	7	8	2	29	2		3	1	1		6	13	2			2				1		5	panama
paratyphi B	3			15			18	2	3	17	1		23	10	6	7	13	1	37	2							2		6		5				9	20	paratyphi B
poona				1			1		1				1		1	4		1	6											1				1	4	6	poona
saint-paul	9		1	33	1	10	54	9	4	24	29	26	92	15	10	47	24	7	103	23	4	7				3	37	4	17	1	16		8		26	30	102	saint-paul
san-diego				6		3	9	3	3	5		2	13	1		3	1	1	6		4	1					5						1		2	1	4	san-diego
schwarzengrund	1			7			8		2		2		4		4	3	2		9	1		I					2			1				1	14	16	schwarzengrund
senftenberg				5		2	7	2	1	1		6	10	1	1	3	5	1	11		1						1				1		2		7	1	11	senftenberg
tennessee		1		28			29	2	1		2	5	10		1	13	14	5	33	2		2				1	5	1	3		3		3		5	1	16	tennessee
thompson	1			16		8	25	20	12	28	16	13	89	19	2	54	66	108	249	11	2	5	1	1		13	33	7	8	2	8	5	9		8	14	61	thompson
typhi	3			12		6	21	25	2	22	10	17	76	44	11	15	9	7	86	2	2	29		2	1	10	46		15	4	11	3	34	11	7	36	121	typhi
typhi-murium	30	1	12	406	29	99	577	406	113	361	135	298	1,313	145	57	367	201	108	878	76	36	91	15	3	3	98	322	14	127	29	98	19	107		155	213	762	typhi-murium
typhi-murium v cop	6			41		18	65	1			21	4	26				27		27		5						5			1						1	typhi-murium v cop
urbana						1	1	2	1	1		1	5	1	1		3	3	8	1			1				2		1							2	3	urbana
weltevreden																1			1																		weltevreden
worthington			1				1	1			3		4	3	1	1	4		9	1		1					2							3		1	4	worthington
untypable, group B	4	51		1	12	1	69		1	3	3		7	1		2	3		6		2				3	1	6			46			13		3	62	untypable, group B
untypable, group C1				1	6	1	8														1		1				2			5	1				1	7	untypable, group C1
untypable, group C2		10			1		11																							8				3	2	13	untypable, group C2
untypable, group D		3		1			4																		1		1			15					5	20	untypable, group D
untypable, group E					1		1														1						1			3						3	untypable, group E
untypable or unknown		10			4	1	15	2					2	1		1		18	20			4					4			13	2		6	1			22	untypable or unknown
TOTAL COMMON	70	77	15	1,327	64	315	1,868	859	389	864	539	876	3,527	491	218	1,096	772	481	3,058	283	117	258	26	17	11	296	1,008	56	447	169	341	34	376	35	614	1,009	3,081	TOTAL COMMON
TOTAL OTHER	2	0	1	15	1	11	30	25	9	28	11	10	83	15	6	50	22	12	105	11	1	4	0	0	0	6	22	4	10	3	7	1	22	0	34	74	155	TOTAL OTHER
GRAND TOTAL	72	77	16	1,342	65	326	1,898	884	398	892	550	886	3,610	506	224	1,146	794	493	3,163	294	118	262	26	17	11	302	1,030	60	457	172	348	35	398	35	648	1,083	3,236	GRAND TOTAL

(New York A=Albany, BI=Beth Israel, C=City)

TABLE I (Continued)

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																							1966 TOTAL	% of 1966 TOTAL	1965 TOTAL	% of 1965 TOTAL	1966 NON-HUMAN TOTAL	% of 1966 NON-HUMAN TOTAL	SEROTYPE
	EAST SOUTH CENTRAL					WEST SOUTH CENTRAL					MOUNTAIN										PACIFIC						OTHER						
	KY	TENN	ALA	MISS	TOT	ARK	LA	OKLA	TEX	TOT	MONT	IDA	WYO	COLO	NM	ARI	UTAH	NEV	TOT	WASH	ORE	CAL	ALAS	HAI	TOT	VI						
anatum			3		3	3	31		8	42		5		8		6	3	1	23	4		29		20	53		333	1.7	300	1.4	441	5.7	anatum
bareilly	1	2			3	1	8		13	22			1	2		1			4			3		3	6		78	0.4	104	0.5	30	0.4	bareilly
berta			1		1		6			6		2							2								34	0.2	47	0.2	7	0.09	berta
blockley	2	4	2		8	1	31	3	14	49	2			8		3			13	20	9	86	1	17	133		603	3.0	401	1.9	194	2.5	blockley
braenderup		6	2		8		3		6	9				4			1		5	5	1	5			11		111	0.6	85	0.4	38	0.5	braenderup
bredeney	4		2	1	7	1	15	1	9	26				20		1			21	7		26		16	49		159	0.8	160	0.8	86	1.1	bredeney
chester	1	1			2	4			2	6	1			3		4	4		12	1	3	11			15		109	0.5	115	0.6	153	2.0	chester
cholerae-suis v kun		1			1		1	1	1	3																	26	0.1	36	0.2	94	1.2	cholerae-suis v kun
cubana						1			2	3				1		7			8		5	10			15		131	0.7	145	0.7	219	2.8	cubana
derby	2	3	4		9	1	17	4	7	29	1			3		1			5	8	7	43	1	34	93		404	2.0	632	3.0	266	3.5	derby
enteritidis	6	13	4		23	5	3	1	5	14		1		3		1	6		11	4	3	47		2	56		1,237	6.2	1,065	5.1	87	1.1	enteritidis
give							18	1	6	25				1		1			2	1	1	7		2	11		78	0.4	116	0.6	55	0.7	give
heidelberg	5	28	10	1	44	5	49	7	45	106	4	2		23		12	51	8	100	31	21	154	3	22	231		1,622	8.1	1,621	7.8	786	10.2	heidelberg
indiana							8			8																	65	0.3	66	0.3	34	0.4	indiana
infantis	2	15	15		32	13	29	8	31	81	2	3		41		6	4		56	29	20	127	1	76	253		1,315	6.6	1,145	5.5	368	4.8	infantis
java		4	1	3	8	3	21	2		26	1	1		1			4		7			43	1	3	47		367	1.8	199	1.0	51	0.7	java
javiana		2	4		6	37	40	2	92	171						5			5		2	9			11		312	1.6	361	1.7	8	0.1	javiana
kentucky							10		2	12							1		1			2		4	6		38	0.2	19	0.09	46	0.6	kentucky
litchfield			1		1		6		6	12						1			1			15			15		97	0.5	96	0.5	19	0.2	litchfield
livingstone							2		2	4				1			2		3	1		2		13	16		31	0.2	33	0.2	86	1.1	livingstone
manhattan	3	2	1		6		3	2	3	8				1					1	4	1	16		6	27		134	0.7	125	0.6	42	0.5	manhattan
meleagridis									1	1												2			2		8	0.04	140	0.7	25	0.3	meleagridis
miami		2			2				1	1												1			1		83	0.4	95	0.5	4	0.05	miami
mississippi		3	2	2	7	1	20		7	28																	55	0.3	38	0.2	2	0.02	mississippi
montevideo	1	8	2		11	3	20	2	14	39				4		2	1		7	2	1	36		9	48		337	1.7	458	2.2	346	4.5	montevideo
muenchen	1	1	2	1	5	1	17	3	16	37	1	1				9			11	1		26			27		229	1.1	219	1.0	69	0.9	muenchen
newington			1		1		2		8	10				1					1	1		12		3	16		53	0.3	57	0.3	82	1.1	newington
newport	8	22	11	3	44	60	114	14	180	368	2			8		27	2		39	1	4	144		56	205		1,319	6.6	1,257	6.0	159	2.1	newport
oranienburg	3	10	1	2	16	1	16	6	31	54				4		19			23		1	32	2	2	37		399	2.0	591	2.8	183	2.3	oranienburg
panama	3				3		9		28	37				3		2	1		6	10	2	14	1	51	78		274	1.4	229	1.1	23	0.3	panama
paratyphi B	1	4			5			3	21	24	2			5		6			13	10		1			11		153	0.8	177	0.8	9	0.1	paratyphi B
poona							2		4	6						3			3	1		16			17		40	0.2	48	0.2	20	0.3	poona
saint-paul	4	6	2		12	3	34	4	10	51	4	2		18		1	5		30	17	137	77	4	21	256		737	3.7	767	3.7	334	4.3	saint-paul
san-diego	1		2		3				6	6				9			16		25	8	16	25	1	1	51		122	0.6	229	1.1	110	1.4	san-diego
schwarzengrund		3			3		18			18				1		2	4		7			3		1	4		71	0.4	114	0.5	276	3.6	schwarzengrund
senftenberg			1		1	1	14	2	5	22				1					1			7		1	8		72	0.4	74	0.4	188	2.4	senftenberg
tennessee						1	7		3	11		6		3		3			12	3	1	8		5	17		133	0.7	173	0.8	206	2.7	tennessee
thompson		3	3	1	7	3	21	20	16	60				8			3		11	6	3	33		2	44		579	2.9	562	2.7	203	2.6	thompson
typhi	8	27			35	33	38	11	20	102	1			1	12	3	6	4	27	21	13	94		12	140		654	3.3	719	3.4	1	0.01	typhi
typhi-murium	40	69	32	6	147	48	129	54	252	483	58	17		131	6	12	48	3	275	177	75	659	1	75	987		5,744	28.7	6,526	31.3	884	11.5	typhi-murium
typhi-murium v cop						4	30		10	44	1	7				2			10								178	0.9	203	1.0	203	2.6	typhi-murium v cop
urbana									5	5							1		1			3			3		28	0.1	33	0.2	18	0.2	urbana
weltevreden																								44	44		45	0.2	35	0.2	0	0.0	weltevreden
worthington		1			1				4	4										1		4		14	19		44	0.2	46	0.2	116	1.5	worthington
untypable, group B			3	16	19	13	7		3	23			1		79	1		1	82		20	10	8		38		312	1.6	293	1.4	19	0.2	untypable, group B
untypable, group C1		1		2	3	6	2		1	9	1				107	1			109		2				2		140	0.7	91	0.4	3	0.04	untypable, group C1
untypable, group C2				6	6	12				12					18				18				1		1		61	0.3	57	0.3	0	0.0	untypable, group C2
untypable, group D				1	1	3			2	5					16	2			18	1			4		5		54	0.3	47	0.2	0	0.0	untypable, group D
untypable, group E				1	1	2				2					4				4		1				1		13	0.06	50	0.2	3	0.04	untypable, group E
untypalbe or unknown				4	4	2	1		5	8								1	1		3	2			5		81	0.4	115	0.6	32	0.4	untypable or unknown
TOTAL COMMON	96	241	112	50	499	272	802	151	907	2,132	81	47	2	317	242	144	163	18	1,014	375	352	1,844	29	515	3,115		19,302						TOTAL COMMON
TOTAL OTHER	4	16	4	0	24	2	68	5	69	144	2	0	0	13	7	5	2	0	29	17	23	76	3	27	146		738						TOTAL OTHER
GRAND TOTAL	100	257	116	50	523	274	870	156	976	2,276	83	47	2	330	249	149	165	18	1,043	392	375	1,920	32	542	3,261		20,040		20,865		7,709		GRAND TOTAL

TABLE II

OTHER SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING 1966

SEROTYPE	REPORTING CENTER																										
	ALA	ALAS	ARI	ARK	CAL	COLO	CONN	DEL	DC	FLA	GA	HAI	IDA	ILL	IND	IOWA	KAN	KY	LA	ME	MD	MASS	MICH	MINN	MISS	MO	MONT	NEBR	NEV
aberdeen					1																								
ebony																													
ebortus-bovis														2															
agama																	1												
alachua					2					1	1								1										
albany					4					2									1		1	2		1					
amager											1																1		
arkansas																			1										
arechavaleta																							1						
atlanta											19																		
austin																										1			
ball					2																								
berlin																													
binza					4	1				3									3		3	1		2					
bonaire					1																								
bonariensis														1															
bovis-morbificans		1			1					1		1		1					1				1						
bradford						2											1												
braendenburg							1				1																		
california					2					1	2				2				6										
carrau																			3										
cerro												3		1			1				2	1							
chailey					5																								
choleræ-suis	1				1	1																1							
coleypark										2																			
colorado																			1										
concord																													
corvallis														1															
daytona										2									1										
denver																													
drypool											1																		
dublin					4																								
duesseldorf					1			1											2										
duisburg																													
durham																								3					
eimsbuettel										3									1				2						
fayed																													
galiema						1																							
gallinarum																													
gaminara										1									5										
garoli														1							1								
glostrup																													
grumpensis												1																	
habana														1									1						
haifa									1		3																		
hartford					2		1			11	1	1		3					1			1	1	1					
ibadon																													
inverness														1									1						
irumu						2																				1			
johannesburg																													
kaapstad						1																							
kottbus																													
lanka					1																								
loma-linda			1		2									2															
lomita																													
london										1																			
luciana										1																			
madelia	1									1																			
manchester*						1									1														
menston																	2												
minneapolis																													
minnesota					3										1	1													
mission										2	1																		
mjimwema																													
molade																													
muenster			1		2					11				2					3										
nagoya																													
new-brunswick	1	2			2		5			5	2				1						2	5	2	2					
new-haw																			9										
newlands						1																							
nienstedten																													
norwich				2			1			3									6							1			
nottingham														1															
ohio					7																		2						
orion																													
oritamerin																													
os																			3										
oslo					4							21					1												
papuana																													
paratyphi-A					3																1	2							
paratyphi-B v odense																							2						
paratyphi-C						1																							
phoenix																													
pomona					2														1							1			
portland																													
potsdam					1									2															
pullorum														9					1										
reading			1		14	2	3	3		2				17				4		2			5	2			1		
remo																													
rubislaw										5									14										
saphra																													
sarajane																													
sendai																						1							
seremban									2																				
siegburg	1		1		2					1									1										
simsbury											1			1								1							
soshanins																													
solna																													
stanley										2				2															
stockholm																													
sundsvall			1											1															
tallahassee										6					1														
texas																													
thomasville														1					1										
virchow																							3						
wassenaar																			1				1						
welasco											1																		
westerstede										5																			
westhampton										1																			
untypable group A																													
untypable group G										1									1										
untypable group H																													
untypable group O					3																								
TOTAL	4	3	5	2	76	13	11	4	3	74	34	27	0	50	5	1	6	4	68	2	10	15	22	11	0	4	2	0	0

TABLE II (Continued)
OTHER SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING 1966

REPORTING CENTER																								1966 TOTAL	1965 TOTAL	1966 non-human TOTAL	SEROTYPE
NH	NJ	NM	NY-A	NY-BI	NY-C	NC	ND	OHIO	OKLA	ORE	PA	RI	SC	SD	TENN	TEX	UTAH	VT	VA	VI	WASH	WV	WIS	WYO				
																			1						1			aberdeen
																									1			abony
																									2		2	abortus-bovis
																2									3			agama
					1																				6	5	30	alachua
					2											1									14	6	2	albany
				1																					3	1	4	amager
																									1	1		arkansas
																									1			arechavaleta
																									19	8		atlanta
											2														1			austin
																									2			ball
											2														2			berlin
	1		1	1	1				1		1										1				24	20		binza
																									1			bonaire
																									1			bonariensis
	1		3																		2				12	31	3	bovis-morbificans
																									4		1	bradford
										1															2	1		brandenburg
																			1						15	22	33	california
																3									6	7	2	carrau
																4									12	13	66	cerro
																			1						6	1		chailey
				2	3			1																	10	10	6	cholerae-suis
																									2			coleypark
					1																				1	3	1	colorado
																									1			concord
																									1	1	4	corvallis
																									3	2		daytona
																2									2	1	5	denver
					1																				2		15	drypool
	1				1																				4	3	39	dublin
																									6	5		duesseldorf
								2													2				4	1		duisburg
																									3			durham
			1			7									1	2									17	4	198	eimsbuettel
						9																			9		2	fayed
				1																					1			galiema
					1																				1		23	gallinarum
																2					1				10	13	2	gaminara
					1																				1			garoli
																									2	1		glostrup
																			1						2		6	grumpensis
					1																				3		2	habana
																									4	1		haifa
	1					2		2								2		1					4		33	22	1	hartford
																									2			ibadon
			4	1																					2	7	1	inverness
					1																				8	23		irumu
																									3	2	4	johannesburg
			1																						1	2	1	kaapstad
																									1	9	1	kottbus
																									1			lanka
									1	1															7	2		loma-linda
			2																						2	3		lomita
																									1	1		london
	1																								1	1	1	luciana
																									3	3	2	madelia
											1														3			manchester
																									2	11	7	menston
			1													2							1		1	1	3	minneapolis
										1					2										8	14	51	minnesota
			1																						6	16	2	mission
																							1		1			mjimwema
																									1			molade
	1										5												2		27	12		muenster
																1									1	1		nagoya
	1		3		1					2	1					9			2		4		1		53	21	86	new-brunswick
																									9		1	new-haw
																									1			newlands
																	1								1			nienstedten
					2			1	1	1					3	7									28	24	7	norwich
																									1	1		nottingham
								3																	12	9	10	ohio
								3																	3		25	orion
					1																				1			oritamerin
																									3			os
																1									26	14	6	oslo
																						1			1			papuana
																									7	12		paratyphi-A
																									2	1		paratyphi-B v odense
																									1	1		paratyphi-C
																1									1			phoenix
					1																				4	3	1	pomona
																									1	1	1	portland
																									3			potsdam
																									10		57	pullorum
	2		7	1		2				17		1			7	3					7		2		105	21	53	reading
																			1						1	2		remo
									1						1	8	1								30	11	11	rubislaw
																13									13	13		saphra
				1	4			2																	2	1		sarajane
																									6			sendai
																									2		1	seremban
	2		1		1										2	2									14	16	37	siegburg
				1												1									5	2	9	simsbury
																1									1			soahanina
					1																				1			solna
						1																	1		6	7		stanley
								1																	1		1	stockholm
																1									3	1		sundsvall
						1																			7	4		tallahassee
					2											1									1			texas
											1														5	3	29	thomasville
																									4	2		wirchow
					1																				2			wassenaar
																									1			welasco
																									6	2	5	westerstede
																									1	7	1	westhampton
		1																							1	2		untypable group A
		4																							6	4		untypable group G
		2																							2			untypable group H
																									3	9	10	untypable group O
0	11	7	25	9	28	22	0	15	5	23	10	1	0	0	16	69	2	1	7	0	17	1	12	0	738			TOTAL

Table III.—*Ten most common serotypes isolated in the United States, 1966*

Serotype	Human			Non Human		
	Rank	Number	Percent	Rank	Number	Percent
S. typhi-murium and S. typhi-murium var. *copenhagen*	1	5,922	29.6	1	1,087	14.1
S. heidelberg	2	1,622	8.1	2	786	10.2
S. newport	3	1,319	6.6			
S. infantis	4	1,315	6.6	4	368	4.8
S. enteritidis	5	1,237	6.2			
S. saint-paul	6	737	3.7	6	334	4.3
S. typhi	7	654	3.3			
S. blockley	8	603	3.0			
S. thompson	9	579	2.9			
S. derby	10	404	2.0	8	266	3.5
S. anatum				3	441	5.7
S. montevideo				5	346	4.5
S. schwarzengrund				7	276	3.6
S. cubana				9	219	2.8
S. tennessee				10	206	2.7
Subtotal		14,392	71.8		4,329	56.2
Total all serotypes		20,040			7,709	

Table IV.—*Age and sex distribution of 20,040 individuals reported as harboring salmonellae during 1966*

Age (years)	Male	Female	Unknown	Total	Percent	Cumulative Percent
Under 1	1,357	1,106	38	2,501	18.2	18.2
1–4	1,870	1,596	12	3,478	25.3	43.5
5–9	918	808	8	1,734	12.6	56.1
10–19	679	645	6	1,330	9.7	65.8
20–29	439	652	4	1,095	8.0	73.8
30–39	331	483	3	817	5.9	79.7
40–49	329	486	3	818	6.0	85.7
50–59	307	424	2	733	5.3	91.0
60–69	249	366	1	616	4.5	95.5
70–79	180	235		415	3.0	98.5
80+	79	119	1	199	1.4	99.9
Subtotal	6,738	6,920	78	13,736*		
Child (unspec.)	111	80	43	234		
Adult (unspec.)	114	223	8	345		
Unknown	2,680	2,623	422	5,725		
Total	9,643	9,846	551	20,040**		
Percent	50.8	49.2				

TABLE V

SALMONELLA SEROTYPES ISOLATED FROM NONHUMAN SPECIMENS IN THE UNITED STATES DURING 1966 BY SOURCE

SEROTYPE	FOWL								ANIMALS											HUMAN DIETARY FOODS									
	DOMESTIC								DOMESTIC																					
	chicken	turkey	other, pet and unknown	environment	total domestic	wild	unknown wild fowl and environment	total fowl	swine	cattle	horses	sheep	dogs	cats	other, unknown, and environment	total domestic	wild and zoo animals and environment	laboratory	unknown	total animals	whole eggs, process not specified	powdered eggs	frozen eggs	other egg products	poultry meat products	red meat products	commercially prepared foods	dried milk	other	unknown	total food
alachua	2	6			8			8														1		1				13			15
amager	3				3			3	1							1				1											
anatum	30	115	4		149	2		151	63	10	2	1	1	1	1	79	3	9		91	6	4	7			14		4			35
bareilly	3	1			4			4	1	1						2				2			1								1
berta	3				3			3																							
binza	8	5			13	3		16	1	2			1			4				4								17			17
blockley	90	69			159	2		161	4	3		1	2			10	2	1		13		1	1		5	2			1		10
bovis-morbificans																															
braenderup	10	1			11			11	17							17				17	3		3	1							7
bredeney	18	12	1		31			31		1						1				1			4	1							5
california	9	5	1		15		2	17																							
cerro	13	1	1		15			15													1	8		1				3			13
champaign																															
chester	12	117			129	1		130	14							14		2		16											
cholerae-suis									5							5				5											
cholerae-suis v kun	1		1		2			2	87	1						88	3	1		92											
corvallis																															
cubana	2	6			8			8	1	1						2	2	2		6	1	7		1			1	36	7		53
denver													2			2	3			5											
derby	10	41			51	1		52	96	3		1	1			101	2		1	104			1			18			20		39
drypool																															
dublin										36			1			37				37											
eimsbuettel	20	1			21		5	26	10				1			11				11						4		15			19
enteritidis	48	9	3		60		1	61	9	2		1	2	2		16		3		19				1		1					2
gallinarum	17		2		19		2	21																							
give	8	9			17		1	18	6	2				1		9				9			1	1		3					5
grumpensis																															
halmstad																															
heidelberg	164	458	2		624	3	3	630	47	5			1		1	54	4			58	24		15	3		9	1	4	2		58
illinois										2						2				2											
indiana	5	17	1		23		1	24					1			1				1						6					6
infantis	166	25	1	1	193		1	194	27	4		1	5			37	2	2		41	11	13	23	5		3		5	3		63
java			1		1		3	4	1				1	1		3	1			4						1			16		17
javiana									5	1						6				6											
johannesburg	1				1			1					1			1				1											
kentucky	5	7			12		1	13	1							1	1			2			1								1
lexington	1				1			1																							
lille																															
litchfield	14	1	2		17			17																							
livingstone	5	4			9		1	10		2						2				2			1					1	1		3
manhattan	6	19			25			25	3							3				3						1					1
manila																							1								1
meleagridis		5			5			5	2		1		1			4	1			5		1						1			2
menston																															
miami									1							1				1											
minneapolis						1		1	1							1				1											
minnesota	2	7			9			9										1		1								1			1
montevideo	112	17	3		132		2	134		2			1			3	1			4	6	6	35	3	1	1		19	1		72
muenchen	22	20			42	1		43	4	2						6	2	1	1	10				1							1
muenster	5	3			8			8																							
new-brunswick										1			1			2	1			3								80			80
newington	28	12		1	41			41		2						2		2	2	6		1	1			1		1	1		5
newport	9	22	1		32			32	25	25	2		6	2		60		7	5	72								1	1		1
norwich									2							2	1			3									3		3
ohio									1							1				1			9								9
oranienburg	5	2			7		2	9	2				1		1	4	1			5	10	3	7	3				4	6		33
orion	6	1		1	8			8					1			1				1							5	2			7
oslo																		5		5											
panama	5	16	1		22			22																							
paratyphi-B																													1		1
poona	2				2			2		1						1	1		1	3											
pullorum	43	2	3		48		5	53	1							1		1		2			2								2
reading	4	32			36			36	1							1				1			3	4					4		11
rubislaw													2			2	4			6											
saint-paul	29	203	1		233		1	234	30	6			3	1		40	1	4		45	3	1	8	2		10		8	1		33
san-diego	2	99			101			101	2					1		3				3	1										
schwarzengrund	12	215		6	233	1	4	238	2				3			5			1	6	2			3	1	1					7
senftenberg	8	59		4	71	1		72	4	1			2			7				7		2	13					1	4		20
siegburg	2				2			2					1			1		1		2			25								25
simsbury		2			2			2			2					2				2											
taksony	1	2			3			3																							
tennessee	36	27		1	64		1	65	7	3		1				11	1			12		10	9	1		1	16	43	2		82
thomasville	1	1			2			2	1	1						2				2											
thompson	84	16	2	1	103		4	107	2	2			3			7				7	6	4	9	3	1				25		48
typhi-murium	176	133	23		332	30	12	374	76	197	45	6	20	8		352	22	13	1	388	3		19		11	1	1		15	1	51
typhi-murium v cop	119	19	17		155	2	2	159	8	16	3	2	1			30	3	3		36						3					3
typhi-suis									5							5				5											
urbana																															
westerstede									3							3				3			2								2
worthington	12	6	1		19	2	1	22	5	3			2			10	1	1		12		1	3					16			20
untypable group B										7						7				7				3			1				4
untypable group C1																															
untypable group E																															
untypable group K																						5	1								6
untypable group O		5			5			5																							
unknown	1	3			4			4														3	15	2					2		22
TOTAL	1,400	1,858	72	15	3,345	50	55	3,450	584	345	55	14	68	17	3	1,086	63	59	12	1,220	77	71	220	40	19	80	25	271	119	1	923

TABLE V (Continued)
SALMONELLA SEROTYPES ISOLATED FROM NONHUMAN SPECIMENS IN THE UNITED STATES
DURING 1966 BY SOURCE

ANIMAL FEED				OTHER							1966 TOTAL	% of 1966 TOTAL	1965 TOTAL	% of 1965 TOTAL	1966 HUMAN TOTAL	% of 1966 HUMAN TOTAL	SEROTYPE
				COLD-BLOODED VERTEBRATES													
animal protein	vegetable protein	unknown	total feed	turtles	other, unknown, and environment	water	animal glandular products	carmine dye	other	unknown							
1		5	6						1		30	0.4	20		6	0.03	alachua
											4	0.05	1		3	0.01	amager
15	1	52	68	16	1	19	34		18	8	441	5.7	269	3.9	333	1.7	anatum
5		6	11			2	9			1	30	0.4	33		78	0.4	bareilly
						4					7	0.09	25		34	0.2	berta
13		32	45						2	1	85	1.1	52	0.8	24	0.1	binza
1		1	2	2		4			2		194	2.5	213	3.1	603	3.0	blockley
		1	1				2				3	0.04	1		12	0.06	bovis-morbificans
		2	2	1							38	0.5	25		111	0.6	braenderup
10		21	31			9	3		2	4	86	1.1	110	1.6	159	0.8	bredeney
3	1	9	13			1			2		33	0.4	49	0.7	15	0.07	california
16		21	37							1	66	0.9	63	0.9	12	0.6	cerro
		4	4								4	0.05	0		0	0.0	champaign
2		2	4			1				2	153	2.0	184	2.7	109	0.5	chester
										1	6	0.08	2		10	0.5	cholerae-suis
		4	4								94	1.2	114	1.7	26	0.1	cholerae-suis v kun
											4	0.05	1		1	0.004	corvallis
16		31	47			1	4	90	5	5	219	2.8	25		131	0.7	cubana
											5	0.06	0		2	0.01	denver
6		38	44			12	12		2	1	266	3.5	106	1.6	404	2.0	derby
		14	14			1					15	0.2	2		2	0.01	drypool
1			1			1					39	0.5	49	0.7	4	0.02	dublin
20		105	125			12			5		198	2.6	63	0.9	17	0.08	eimsbuettel
				4		1					87	1.1	53	0.8	1,237	6.2	enteritidis
										2	23	0.3	37	0.5	1	0.004	gallinarum
4		6	10	1		3	3		3	3	55	0.7	95	1.4	78	0.4	give
		6	6								6	0.08	1		2	0.01	grumpensis
		12	12								12	0.2	0		0	0.0	halmstad
		10	10			7	1		6	16	786	10.2	831	12.2	1,622	8.1	heidelberg
2		2	4							1	7	0.09	6		0	0.0	illinois
				1		2					34	0.4	37	0.5	65	0.3	indiana
6		34	40	1	1	8	3		11	6	368	4.8	385	5.6	1,315	6.6	infantis
1		4	5	12		7	1		1		51	0.7	25		367	1.8	java
		2	2								8	0.1	11		312	1.6	javiana
1		1	2								4	0.05	7		1	0.004	johannesburg
11		14	25			1			3	1	46	0.6	48	0.7	38	0.2	kentucky
4		8	12							2	15	0.2	11		0	0.0	lexington
		3	3								3	0.04	0		0	0.0	lille
						1				1	19	0.2	18		97	0.5	litchfield
3	2	59	64			2			1	4	86	1.1	82	1.2	31	0.2	livingstone
3		3	6	1		3	2		1		42	0.5	42	0.6	134	0.7	manhattan
1		6	7			1	3				12	0.2	4		0	0.0	manila
4		9	13								25	0.3	80	1.2	8	0.04	meleagridis
6		1	7								7	0.09	3		2	0.01	menston
						2				1	4	0.05	11		83	0.4	miami
1			1								3	0.04	1		1	0.004	minneapolis
4		34	38			2					51	0.7	33		8	0.04	minnesota
42	1	72	115			3			6	12	346	4.5	213	3.1	337	1.7	montevideo
		6	6	1	1	4	1		1	1	69	0.9	50	0.7	229	1.1	muenchen
		13	13			1					22	0.3	11		27	0.1	muenster
1		2	3								86	1.1	1		53	0.3	new-brunswick
6		10	16			5			8	1	82	1.1	48	0.7	53	0.3	newington
3		6	9	7	1	15	19		2	1	159	2.1	203	3.0	1,319	6.6	newport
						1					7	0.09	1		28	0.1	norwich
											10	0.1	9		12	0.06	ohio
22	1	36	59	56	5	9	1		3	3	183	2.4	190	2.8	399	2.0	oranienburg
2		2	4						5		25	0.3	9		3	0.01	orion
						1					6	0.08	12		26	0.1	oslo
					1						23	0.3	32		274	1.4	panama
				4		4					9	0.1	7		153	0.8	paratyphi-B
		1	1	5		3	4		2		20	0.3	13		40	0.2	poona
											57	0.7	200	2.9	10	0.05	pullorum
		1	1							4	53	0.7	49	0.7	105	0.5	reading
		2	2	1		1			1		11	0.1	5		30	0.1	rubislaw
2		8	10	1		5	2		1	3	334	4.3	273	4.0	737	3.7	saint-paul
					1	3				1	110	1.4	158	2.3	122	0.6	san-diego
4		10	14	2	1		1		4	3	276	3.6	162	2.4	71	0.4	schwarzengrund
27		54	81			1	1		1	5	188	2.4	127	1.9	72	0.4	senftenberg
3		5	8								37	0.5	13		14	0.07	siegburg
2		2	4							1	9	0.1	4		2	0.02	simsbury
		1	1							1	5	0.06	2		0	0.0	taksony
11	1	28	40				2		3	2	206	2.7	117	1.7	133	0.7	tennessee
2		22	24							1	29	0.4	10		5	0.02	thomasville
		10	10	11	1	14			4	1	203	2.6	198	2.9	579	2.9	thompson
6		14	20	3		7	3		9	29	884	11.5	978	14.3	5,744	28.7	typhi-murium
2		1	3						2		203	2.6	282	4.1	178	0.9	typhi-murium v cop
									1	1	7	0.09	2		0	0.0	typhi-suis
4		1	5	6		3	3			1	18	0.2	29		28	0.1	urbana
											5	0.06	2		6	0.03	westerstede
14		39	53			2			5	2	116	1.5	84	1.2	44	0.2	worthington
		1	1	1	2	1				3	19	0.2	13		312	1.6	untypable group B
				1	1	1					3	0.04	14		140	0.7	untypable group C1
1		2	3								3	0.04	2		13	0.06	untypable group E
		5	5								11	0.1	2		0	0.0	untypable group K
		4	4							1	10	0.1	2		3	0.01	untypable group O
		4	4	1		1					32	0.4	11		81	0.4	unknown
314	7	924	1,245	139	16	192	114	90	123	138	7,709*		6,834*		20,040		TOTAL

*Includes rare Serotypes.

TABLE VI

REPORTED NONHUMAN ISOLATES BY SEROTYPE AND STATE DURING 1966

SEROTYPE	REGION AND REPORTING CENTER																																SEROTYPE
	NEW ENGLAND						MIDDLE ATLANTIC					EAST NORTH CENTRAL						WEST NORTH CENTRAL							SOUTH ATLANTIC									
	ME	NH	VT	MASS	RI	CONN	TOT	NY-A	NY-BI	NY-C	NJ	PA	TOT	OHIO	IND	ILL	MICH	WIS	TOT	MINN	IOWA	MO	ND	SD	NEBR	KAN	TOT	DEL	MD	DC	VA	WV	NC	SC	GA	FLA	TOT	
alachua											3	1	4		9				9	5							5										alachua
amager																																					amager
anatum		2		5		1	8				15	23	38	20	7	19	6	5	57	41	3	9		1	21	17	92		6	8	9	1	2	1	6	9	42	anatum
bareilly											1		1	1	1	2	2		6	2	1				6		9			1					1	2	bareilly
berta																		4	4															2		2	berta
binza		1					1	1			4	1	6		6	23	4	1	34	5	5	2		1		2	15		1		1		1			4	7	binza
blockley											2	1	3		10	7	2	23	42	10	3	15					28		3		3		3	1	11		21	blockley
bovis-morbificans																														2							2	bovis-morbificans
braenderup						7	7																						1		1						2	braenderup
bredeney		1			1	4	6				1		1	3	3	10	2		18	14		1			2	1	18		1	2						2	5	bredeney
california											2		2			3		1	4	3		1			2		6							2	1	3	california
cerro		1					1							10	9	5			24	9	2	1					12		3				1	2		6	cerro
champaign																																						california
chester						1	1					1	1	2	4	6		61	73	32	3	7					42				2				3		5	chester
cholerae-suis																																1		1			2	cholerae-suis
cholerae-suis v kun														2	27	1			30			8	8				16	1			5		8	11		4	29	cholerae-suis v kun
corvallis																																						corvallis
cubana				15			15	52			12	1	65	14	14	15	28	1	72	4				2		1	7			8				1	1	10	cubana
denver																																						denver
derby				2			2	1			18	33	52	8	5	2		20	35	20	2	4			6		32			2			1	8		11	derby
drypool																																						drypool
dublin																																						dublin
eimsbuettel						1	1				1	3	4	1	14	5	6		26	2	5	1					8				1			3	1	5	eimsbuettel
enteritidis						2	2				1	1	2		37	1			38	7	2	1					10	1	4		2		8		12		27	enteritidis
gallinarum											3	2	5					1	1	2	1						3				1				1		2	gallinarum
give						1	1				2	1	3		2	4	1		7	1	1				2		4		4	1		1	1	1	2		10	give
grumpensis																	1		1																			grumpensis
halmstad																	4		4	3							3											halmstad
heidelberg						1	1	2			6	9	17	6	32	5	3	35	81	218	15	10		2	3		248		22		2		4		95	1	124	heidelberg
illinois																				2							2											illinois
indiana											6	2	8	1	15	1			17		3	4					7								1	1	indiana
infantis		2					2				9	15	24	9	23	41	5	3	81	8	3	28			10	15	64		7	2	2	3		26	2	42	infantis
java						5	5	4		4	1	12	21			1	1		2																		java
javiana																						1					1											javiana
johannesburg											1		1				1		1																			johannesburg
kentucky											2		2		2	5	1	1	9	10	1				3		14		1	1	1					3	kentucky
lexington											2		2		2			1	3	1							1										lexington
lille											1		1																2							2	lille
litchfield														1					1							2	2								1	13	14	litchfield
livingstone											14		14	38		1			39									3									3	livingstone
manhattan											2	2	4	1	1			2	4	1	3				1		5		1						1	1	1	manhattan
manila															4	1	1		6										2								2	manila
meleagridis											1		1		3		1	3	7	3		1			3		7											meleagridis
menston																										6	6											menston
miami																																			1	1	miami
minneapolis												1	1																1								1	minneapolis
minnesota											2		2	2	1	1	5		9	1	1	1					3								1		1	minnesota
montevideo						2	2	2			17	6	25	15	7	21	30	4	77	39	7	10			5	3	64		15		1		5	2	58		81	montevideo
muenchen												1	1		5		1		6	3		3				1	7		1		1		1		22		25	muenchen
muenster																						1					1								3		3	muenster
new-brunswick															35	2	2	2	41	41							41				2						2	new-brunswick
newington											1		1	2	2	7	3	3	17	4		1			2	1	8				2				3	5	newington
newport						1	1	3			10	1	14	1	3	7	5	2	18	12	1	1			9	3	26		1	5					1	1	8	newport
norwich						1	1				1		1				1		1																			norwich
ohio								1			1		2							1	7						8											ohio
oranienburg				1			1	4			9	2	15	21	4	18	4		47	11	4	2			1	63	81		2		2				3	4	11	oranienburg
orion														6	1	9		2	18	1							1											orion
oslo																																						oslo
panama		2					2	1					1					1	1			2					2											panama
paratyphi-B														3					3										1							1	paratyphi-B
poona																	2		2			4	4				8		1					1		2	poona
pullorum			2				2					3	3	5			1	10	16	5	2	3			4	1	15		1		9		4				14	pullorum
reading															3	1		2	6	5	6	1		1			13				1						1	reading
rubislaw						1	1									2			2																			rubislaw
saint-paul											9	15	24	1	5	5	2	48	61	82	9	4		1	2	9	107		1				1		13	2	17	saint-paul
san-diego															6		1		7	6	2	4	1				13					1	4				5	san-diego
schwarzengrund						1	1				2	1	3	6	16	5		4	31	12		6			2	1	21		1				1		4		6	schwarzengrund
senftenberg											12		12	5	4	12	2	2	25	49	10	2		5			66		2	4			1		1	3	11	senftenberg
siegburg															2		27		29																			siegburg
simsbury											1		1		1				1																			simsbury
taksony																													2						1		3	taksony
tennessee						1	1					1	1	1	12	9	7	2	31	60	5	1			2		68		15	3	4				4		26	tennessee
thomasville																				4					2		6											thomasville
thompson						5	5				1		1	2	18	22	11	1	54	8	1	2			1	7	19	1	13	2	2		4		9	4	35	thompson
typhi-murium		6		2		48	56	8			17	18	43	23	71	20	31	28	173	61	8	26		3	3	12	113		13	2	19		3	1	15	9	62	typhi-murium
typhi-murium v cop						5	5	1			10	14	25	1	10	3	6	10	30	14	1	9			1		25		8				6		46	1	61	typhi-murium v cop
typhi-suis																				1							1											typhi-suis
urbana												1	1	1		5	2		8	1					3		4		1								1	urbana
westerstede												3	3													2	2											westerstede
worthington								1			3		4	1	13	25	4	2	45	1	8						9		1						3	4	8	worthington
untypable group B																																						untypable group B
untypable group C1																																						untypable group C1
untypable group E																																						untypable group E
untypable group K														1		2	2		5			3	1				4		1								1	untypable group K
untypable group O																																						untypable group O
unknown								1			13		14	1			1		2			5					5								1		1	unknown
TOTAL	0	15	2	25	1	88	131	82	0	4	219	175	480	215	449	334	219	285	1,502	825	133	181	1	17	100	151	1,408	3	142	43	70	4	52	30	363	79	786	TOTAL

(NY A-Albany, BI-Beth Israel, C-City)

TABLE VI (Continued)
REPORTED NONHUMAN ISOLATES BY SEROTYPE AND STATE DURING 1966

SEROTYPE	REGION AND REPORTING CENTER																									1966 TOTAL	% of 1966 TOTAL	1965 TOTAL	% of 1965 TOTAL	1966 HUMAN TOTAL	% of 1966 HUMAN TOTAL	SEROTYPE
	EAST SOUTH CENTRAL					WEST SOUTH CENTRAL					MOUNTAIN										PACIFIC					OTHER						
	KY	TENN	ALA	MISS	TOT	ARK	LA	OKLA	TEX	TOT	MONT	IDA	WYO	COLO	NM	ARI	UTAH	NEV	TOT	WASH	ORE	CAL	ALAS	HAI	TOT	VI						
alachua				1	1		1			1							2		2			8			8		30	0.4	20		6	0.03	alachua
amager						3				3		1							1								4	0.05	1		3	0.01	amager
anatum	15		2		17	11	95	1	8	115		2		1		1	6		10	7		55			62		441	5.7	269	3.9	333	1.7	anatum
bareilly				1	1		6			6							2		2	1		2			3		30	0.4	33		78	0.4	bareilly
berta																						1			1		7	0.09	25		34	0.2	berta
binza			1		1	1	14		2	17							1		1			3			3		85	1.1	52	0.8	24	0.1	binza
blockley				7	7	10	2			12		1				1	2		4	18	15	44			77		194	2.5	213	3.1	603	3.0	blockley
bovis-morbificans																						1			1		3	0.04	1		12	0.06	bovis-morbificans
braenderup			1	1	2	4	18		1	23												4			4		38	0.5	25		111	0.6	braenderup
bredeney			1	2	3		13	5		18							1		1	2	1	13			16		86	1.1	110	1.6	159	0.8	bredeney
california			2	6	8		7		2	9				1					1								33	0.4	49	0.7	15	0.07	california
cerro				10	10	4	6			10												3			3		66	0.9	63	0.9	12	0.6	cerro
champaign							4			4																	4	0.05	0		0	0.0	champaign
chester	10			2	12		13		1	14												5			5		153	2.0	184	2.7	109	0.5	chester
cholerae-suis				2	2																	2			2		6	0.08	2		10	0.5	cholerae-suis
cholerae-suis v kun			5	5	10		4	1	1	6												3			3		94	1.2	114	1.7	26	0.1	cholerae-suis v kun
corvallis							4			4																	4	0.05	1		1	0.004	corvallis
cubana	4			1	5	3	11	2		16										13	4	11	1		29		219	2.8	25		131	0.7	cubana
denver									5	5																	5	0.06	0		2	0.01	denver
derby						3	91		2	96						2	3		5	6		27			33		266	3.5	106	1.6	404	2.0	derby
drypool							15			15																	15	0.2	2		2	0.01	drypool
dublin																	9		9			30			30		39	0.5	49	0.7	4	0.02	dublin
eimsbuettel			2	19	21	3	107	15	4	129										4					4		198	2.6	63	0.9	17	0.08	eimsbuettel
enteritidis						1			2	3				1			2		3			2			2		87	1.1	53	0.8	1,237	6.2	enteritidis
gallinarum			2		2	6			2	8												2			2		23	0.3	37	0.5	1	0.004	gallinarum
give	1		1	1	3	1	12	1		14										1	2	10			13		55	0.7	95	1.4	78	0.4	give
grumpensis							5			5																	6	0.08	1		2	0.01	grumpensis
halmstad							5			5																	12	0.2	0		0	0.0	halmstad
heidelberg	1	2	8	5	16	19	36		2	57				1		2	69		72	15	12	143			170		786	10.2	831	12.2	1,622	8.1	heidelberg
illinois							2			2							1		1			2			2		7	0.09	6		0	0.0	illinois
indiana							1			1																	34	0.4	37	0.5	65	0.3	indiana
infantis	3	3	3	1	10	22	10		2	34	1			1		3	9		14	14	5	76	2		97		368	4.8	385	5.6	1,315	6.6	infantis
java				2	2		1			1												14			14		51	0.7	25		367	1.8	java
javiana							7			7																	8	0.1	11		312	1.6	javiana
johannesburg						1	1			2																	4	0.05	7		1	0.004	johannesburg
kentucky				3	3	1	8		2	11						3	1		4								46	0.6	48	0.7	38	0.2	kentucky
lexington							6			6												3			3		15	0.2	11		0	0.0	lexington
lille																											3	0.04	0		0	0.0	lille
litchfield																				1		1			2		19	0.2	18		97	0.5	litchfield
livingstone							12		3	15						1			1			14			14		86	1.1	82	1.2	31	0.2	livingstone
manhattan						5	4			9							1		1	1		15			16		42	0.5	42	0.6	134	0.7	manhattan
manila							4			4																	12	0.2	4		0	0.0	manila
meleagridis							6			6												4			4		25	0.3	80	1.2	8	0.04	meleagridis
menston							1			1																	7	0.09	3		2	0.01	menston
miami									1	1										1		1			2		4	0.05	11		83	0.4	miami
minneapolis																						1			1		3	0.04	1		1	0.004	minneapolis
minnesota				1	1	2	26			28							1		1			6			6		51	0.7	33		8	0.04	minnesota
montevideo		4	2	8	14	3	53		4	60							6		6		1	16			17		346	4.5	213	3.1	337	1.7	montevideo
muenchen				1	1	1	11		2	14										1		14			15		69	0.9	50	0.7	229	1.1	muenchen
muenster			1	2	3	1	12			13										1		1			2		22	0.3	11		27	0.1	muenster
new-brunswick									2	2																	86	1.1	1		53	0.3	new-brunswick
newington	1				1		14		1	15				1			1		2	1		32			33		82	1.1	48	0.7	53	0.3	newington
newport	2			6	8	2	33		7	42						3	3		6	2	1	33			36		159	2.1	203	3.0	1,319	6.6	newport
norwich							2	2		4																	7	0.09	1		28	0.1	norwich
ohio																											10	0.1	9		12	0.06	ohio
oranienburg							18		3	21		1							1	1	2	3			6		183	2.4	190	2.8	399	2.0	oranienburg
orion				4	4		2			2																	25	0.3	9		3	0.01	orion
oslo																						6			6		6	0.08	12		26	0.1	oslo
panama						14			3	17																	23	0.3	32		274	1.4	panama
paratyphi-B									1	1										3	1				4		9	0.1	7		153	0.8	paratyphi-B
poona							1			1												7			7		20	0.3	13		40	0.2	poona
pullorum		1			1		2			2	1		1						2	1	1				2		57	0.7	200	2.9	10	0.05	pullorum
reading																	2		2	2	16	13			31		53	0.7	49	0.7	105	0.5	reading
rubislaw							3		5	8																	11	0.1	5		30	0.1	rubislaw
saint-paul			1	1	2	10	19		8	37				2		3	9		14	13	25	34			72		334	4.3	273	4.0	737	3.7	saint-paul
san-diego							1		1	2				1			1		2	3	8	70			81		110	1.4	158	2.3	122	0.6	san-diego
schwarzengrund				1	1	1	4			5				1			3		4			204			204		276	3.6	162	2.4	71	0.4	schwarzengrund
senftenberg			2	3	5	1	38		6	45				1		1	3		5			19			19		188	2.4	127	1.9	72	0.4	senftenberg
siegburg						2	5			7							1		1								37	0.5	13		14	0.07	siegburg
simsbury	1			1			1			1				1					1			4			4		9	0.1	4		5	0.02	simsbury
taksony																						2			2		5	0.06	2		0	0.0	taksony
tennessee	4		1	17	22	2	29			31						2			2	1	4	19			24		206	2.7	117	1.7	133	0.7	tennessee
thomasville				1	1		21			21												1			1		29	0.4	10		5	0.02	thomasville
thompson		3	1		4	27	5		2	34							8		8	13	6	24			43		203	2.6	198	2.9	579	2.9	thompson
typhi-murium	10		7	2	19	20	29	1	19	69	3	6	1	4		17	9		40	28	28	253			309		884	11.5	978	14.3	5,744	28.7	typhi-murium
typhi-murium v cop	1		2	12	15	25	2		1	28	2	2				2	3		9	1	2	2			5		203	2.6	282	4.1	178	0.9	typhi-murium v cop
typhi-suis																						6			6		7	0.09	2		0	0.0	typhi-suis
urbana							1			1										2	1				3		18	0.2	29		28	0.1	urbana
westerstede																											5	0.06	2		6	0.03	westerstede
worthington			4	2	6	2	28			30				1					1		2	11			13		116	1.5	84	1.2	44	0.2	worthington
untypable group B															2				2		9	8			17		19	0.2	13		312	1.6	untypable group B
untypable group C1																					3				3		3	0.04	14		140	0.7	untypable group C1
untypable group E							3			3																	3	0.04	2		13	0.06	untypable group E
untypable group K									1	1																	11	0.1	2		0	0.0	untypable group K
untypable group O							4			4												6			6		10	0.1	2		3	0.01	untypable group O
unknown							3			3											1	6			7		32	0.4	11		81	0.4	unknown
TOTAL	53	13	49	130	245	211	902	28	106	1,247	7	13	2	17	2	41	159	0	241	157	150	1,300	3	0	1,610	0	7,709*		6,834*		20,040		TOTAL

VI (Virgin Islands)

*Includes rare serotypes.

Table VII.—*Rare salmonella serotypes recovered from nonhuman sources in the United States, 1966*

Serotype	State	Source	Nonhuman		Human	
			1966	Total[1] 1963-65	1966[2]	Total[3] 1963-65
S. abortus-bovis	ILL (1)	Rabbit				
	LA (1)	Livestock feed	2	0	2	0
S. adelaide	LA (1)	Livestock feed	1	2	0	7
S. alagbon	NJ (2)	Unknown feed	2	0	0	0
S. albany	MD (1)	Chicken				
	MISS (1)	Chicken	2	16	14	15
S. amsterdam	OHIO (1)	Unknown feed	1	1	0	1
S. babelsberg	IND (1)	Bone meal and meat scraps	1	0	0	1
S. birmingham	LA (1)	Livestock feed	1	0	0	0
S. bradford	NJ (1)	Pork	1	0	4	2
S. cambridge	LA (1)	Livestock feed	1	4	0	6
S. caracas	LA (1)	Livestock feed	1	1	0	1
S. carrau	MASS (2)	Snake	2	3	6	11
S. colorado	NJ (1)	Unknown feed	1	0	1	8
S. eastbourne	MINN (2)	Lizard	2	1	0	6
S. emek	TEX (1)	Unknown feed	1	0	0	4
S. eppendorf	NJ (1)	Pork	1	0	0	0
S. fayed	LA (1)	Livestock feed				
	NC (1)	Dog	2	0	9	6
S. gaminara	LA (1)	Sewage				
	TEX (1)	Dog	2	4	10	19
S. habana	MD (2)	Chicken feed and cooked blood and feathers	2	0	3	1
S. hamilton	LA (1)	Soybean meal	1	0	0	0
S. hartford	FLA (1)	Turtle	1	4	33	49
S. inverness	ILL (1)	Lab mouse	1	6	2	11
S. jedburgh	LA (1)	Turtle food	1	0	0	0
S. kaapstad	LA (1)	Livestock feed	1	0	1	2

[1]Represents 17,684 isolations of salmonellae from nonhuman sources, 1963-65.
[2]Represents 20,040 isolations of salmonellae from humans during 1966.
[3]Represents 60,625 isolations of salmonellae from humans, 1963-65.

Table VII.—*Rare salmonella serotypes recovered from nonhuman sources in the United States, 1966* (Concluded)

Serotype	State	Source	Nonhuman		Human	
			1966	Total[1] 1963-65	1966[2]	Total[3] 1963-65
S. kottbus	GA (1)	Chicken	1	1	1	14
S. luciana	LA (1)	Turtle	1	0	1	2
S. madelia	CALIF (1)	Turtle water				
	SC (1)	Cattle	2	8	3	5
S. mikawasima	IND (2)	Turkey	2	2	0	0
S. mission	LA (1)	Livestock feed				
	OHIO (1)	Animal feed	2	6	6	20
S. mississippi	LA (1)	Livestock feed				
	VA (1)	Livestock feed	2	1	55	106
S. new-haw	NJ (1)	Animal feed	1	1	9	2
S. pharr	MICH (1)	Capybara	1	0	0	0
S. pomona	NJ (1)	Animal feed	1	6	4	4
S. portland	WASH (1)	Turtle water	1	0	1	1
S. seremban	KAN (1)	Ice cream	1	0	2	0
S. stockholm	OHIO (1)	Animal feed	1	1	1	0
S. teddington	LA (1)	Livestock feed	1	0	0	0
S. tourai	NJ (1)	Animal feed	1	0	0	0
S. tucson	CALIF (1)	Unknown	1	0	0	0
S. tuebingen	MICH (1)	Snake	1	0	0	0
S. typhi	MO (1)	Water in pink elephant	1	1	654	2,128
S. uganda	KAN (2)	Tankage	2	1	0	7
S. vejle	LA (1)	Livestock feed	1	0	0	0
S. waycross	MINN (1)	Lizard	1	0	0	0
S. westhampton	KAN (1)	Egg product	1	5	1	9
S. wichita	NEB (1)	Glandular material	1	0	0	0
S. antypable group I	CALIF (1)	Horse	1	0	0	0

[1]Represents 17,684 isolations of salmonellae from nonhuman sources, 1963-65.
[2]Represents 20,040 isolations of salmonellae from humans during 1966.
[3]Represents 60,625 isolations of salmonellae from humans, 1963-65.

Table VIII.—*Five most common salmonella serotypes isolated from domestic fowl and farm animals in the United States, 1966*

Serotype	Chickens		Turkeys		Swine		Cattle		All Domestic Fowl and Farm Animals	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
S. anatum					63	10.8 (4)	10	2.9 (4)		
S. blockley	90	6.4 (5)								
S. chester			117	6.3 (5)						
S. cholerae-suis v. kunzendorf					87	14.9 (2)				
S. derby					96	16.4 (1)				
S. dublin							36	10.4 (2)		
S. heidelberg	164	11.7 (3)	458	24.7 (1)	47	8.0 (5)			676	15.8 (2)
S. infantis	166	11.9 (2)							224	5.2 (5)
S. montevideo	112	8.0 (4)								
S. newport							25	7.2 (3)		
S. saint-paul			203	10.9 (3)			6	1.7 (5)	269	6.3 (3)
S. schwarzengrund			215	11.6 (2)					235	5.5 (4)
S. typhi-murium and S. typhi-murium v. copenhagen	295	21.1 (1)	152	8.2 (4)	84	14.4 (3)	213	61.7 (1)	784	18.3 (1)
Total	827	59.1	1,145	61.6	377	64.6	290	84.1	2,188	51.2
Total (all serotypes)	1,400		1,858		584		345		4,274	

*Rank shown in parentheses.