NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS. . .

Annual Summary 1967

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

This report summarizes the results of the fifth year (December 31, 1966-December 29, 1967) 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 collected by the Salmonellosis Unit and represent laboratory identifications of salmonellae, without distinction as to whether the isolate came from a clinical case or a carrier. Clinical cases of salmonellosis not confirmed by culture are excluded.

Interpretations are limited by the bias inherent in the data analyzed. For example, geographical prevalence and age of patients may 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 these limitations, certain observations are justified, and the data herein provide the basis for comparison with past and future results.

III. SUMMARY

During 1967, 19,723 isolations of salmonellae from humans were reported, representing a 1.6 percent decrease from the 20,040 reported for 1966 and a 5.5 percent decrease from the 20,865 reported in 1965. 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 8,794 recoveries of salmonellae from nonhuman sources were reported during 1967, an increase of 14.1 percent over 1966 and 28.7 percent over 1965. 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 1963 (Figure 1). This increase was in part due to greater availability of laboratory facilities, better techniques of isolation and identification, and improved reporting of salmonellosis. Since 1964, however, the incidence has been essentially constant (Figure 2).

In Figure 1, a comparison of the incidence of salmonellosis in the United States with typhoid fever is presented. 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 1967 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 and the lowest number from January to May.

Serotype Frequency

A total of 155 different salmonella serotypes were reported in 1967, compared with 153 in 1966 (Tables I and II). This number (155) represents approximately 12 percent of the more than 1,200 known salmonella serotypes.

The ten most frequently reported serotypes appear in Table III. These ten serotypes accounted for 14,001 (71.0 percent) of the 19,723 isolates reported during 1967. As in previous years, S. typhi-murium and S. typhi-murium var. copenhagen together were the most frequently reported serotypes during 1967 and represented 29.4 percent of all isolations. These serotypes were also the most frequently reported serotypes for each month of 1967. S. heidelberg, the second most frequently reported serotype, accounted for 8.4 percent of the total isolations.

Table III also demonstrates the close correlation between human and nonhuman sources of salmonellae, with four serotypes appearing on both lists. The similarities 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 1967 appears in Figure 4. California reported the largest number, 2,128; other states reporting over 1,000 isolations were New York, Massachusetts, Illinois, Florida, and Texas.

The incidence of salmonella infection for the entire country was 10.0 per 100,000. Hawaii, as in past years, reported the highest incidence, with 85.9 per 100,000. Other areas reporting incidence rates higher than 20 per 100,000 were New Mexico, Massachusetts, Louisiana, Florida, and the District of Columbia.

Geographic variations among specific serotypes are seen in Tables I and II. Several serotypes exhibited definite regional patterns, which had been observed in previous years. This is especially true in Hawaii, which accounted for only 3.2 percent of national salmonella isolations but reported 97 percent (59 of 61) of all isolations of S. weltevreden, 74 percent (14 of 19) of isolations of S. oslo, and 44 percent (24 of 55) of isolations of S. livingstone. Other regional patterns were seen. S. javiana was isolated almost only in the central and southern states, and two states, Texas and Florida, accounted for 61 percent of the 373 isolations of this serotype. For S. saphra, 9 of 11 isolations were from Texas, continuing a trend first noted in 1965. Appropriately, 75 percent of isolations of S. miami (52 of 69) were from Florida, and all 11 of the isolations of S. atlanta were from Georgia.

Outbreaks

In 1967, 29 outbreaks involving 5,761 individuals were reported in the Salmonella Surveillance Reports (see following table). Of 25 food-borne outbreaks, 18 were traced to a specific contaminated food, including 7 caused by contaminated eggs, 5 by contaminated turkey, 2 by pork, 2 by beef, 1 by raw milk, and 1 by potato salad; in 7 food-borne outbreaks, the specific food could not be identified. The vehicles involved demonstrate the significance of animal reservoirs in the transmission of salmonellosis and provide direction to necessary control measures.

Outbreaks Reported in the Salmonella Surveillance Reports, 1967

Vehicle of Infection	No. Persons Ill	Location	Serotype
Eggs	21	Hospital	S. infantis
	13	Hospital	S. typhi-murium
	1,800	Banquets	S. typhi-murium & S. braenderup
	250	School cafeteria	S. montevideo
	7	Home	S. enteritidis
	5	Home	S. pullorum
	5	Home	S. typhi-murium var. copenhagen
Turkey	185	Dormitory	S. manhattan & S. heidelberg
	1,900	Banquet	S. typhi-murium, S. manhattan & S. newport
	172	Banquet	S. typhi-murium
	7	Home	S. heidelberg
	31	Nursing home	S. enteritidis
Pork	90	Restaurant	S. chester
	10	Restaurant	S. typhi-murium
Beef jerky	100	Product	S. thompson
Beef	300	School	S. thompson
Potato salad	210	Banquet	S. typhi-murium var. copenhagen
Raw milk	40	Home	S. typhi-murium
Food-borne, vehicle unidentified	41	Restaurant	S. typhi-murium
	14	Home	S. typhi
	42	Banquet	S. montevideo
	31	Dormitory	S. typhi
	12	Home	S. typhi
	319	Restaurant	S. newport
	3	Home	S. typhi
Contact-spread	104	Hospital	S. typhi-murium
	8	Hospital	S. javiana
	9	Hospital	S. typhi-murium
	32	Hospital	S. heidelberg

TOTALS:	Outbreaks	29
	Cases	5,761
	Serotypes	14

Six outbreaks, involving 187 persons, occurred in hospitals and were responsible for 10 of the 13 deaths related to outbreaks. Hospital-acquired salmonellosis continues to be a serious problem. Although these outbreaks accounted for only 21 percent of reported outbreaks, they accounted for 77 percent of all fatalities.

Although the etiology of all outbreaks was confirmed bacteriologically, many of the 5,761 individuals ill were never cultured and are not included as reported isolations in the national surveillance data. In the two largest outbreaks reported in 1967, involving a total of 3,700 persons, only about 1 percent of those ill were cultured and reported. Thus, only a small fraction of the total of 19,723 isolations of salmonellae in 1967 were from reported outbreaks. This suggests that many outbreaks are never investigated.

Age and Sex Distribution

Of the 19,723 individuals for whom sex was reported during 1967, 9,490 (49.8 percent) were males, and 9,577 (50.2 percent) were females (Table IV). Although 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 4 years. The age-sex distribution for 1967 is presented in the following table.

	Male		Female		
Age (Years)	Number	Percent	Number	Percent	Total
Less than 20	4,877	53.5	4,238	46.5	9,115
20 and over	1,911	41.9	2,646	58.1	4,557
TOTAL	6,788	49.6	6,884	50.4	13,672

(Unknown and unspecified ages not included)

Of the 13,743 individuals reported by age during 1967, 9,115 (66.7 percent) were less than 20 years of age. This is almost the same proportion as in 1966. Figure 5 demonstrates the number of isolations per 100,000 in various age groups for 1967. This pattern closely approximates those for the years 1963 through 1966. However, the rates in the age groups less than 10 appeared to have been increasing over the past 5 years. This is particularly true in the less-than-1-year age group where the rates per 100,000 have been 43, 53, 63, 69, and 74, respectively, for the years 1963 through 1967. In Figure 5, isolations in this age group are further divided by age in months. The rate of isolations rises to an incidence greater than 100 isolations per 100,000 population between 2 and 4 months and gradually declines to an incidence of 30 per 100,000 at 11 months.

Mortality

An accurate assessment of the number of deaths related to salmonella infections is not possible. Reporting officials are not always provided information concerning the clinical status of the individual from whom an isolation has been made. Also, since fatal cases of salmonellosis often occur in patients with severe underlying illness, it can be difficult to assess the role of the salmonella infection in the final outcome. Finally, cases in which isolates are reported prior to death would not be reported as fatalities. The best available measure of the case fatality ratio of

clinical salmonellosis can be obtained by studying investigated outbreaks. In the 29 outbreaks reported in the Salmonella Surveillance Reports in 1967, 13 deaths occurred among 5,761 cases, representing a death-to-case ratio of 0.22 percent. Almost all fatalities occurred in young infants, the elderly, and persons severely ill with other diseases.

Uncommon and Rare Serotypes

Table II lists 111 serotypes which are classified as uncommon or rare. Seventy-seven serotypes, representing 50 percent of the 155 reported serotypes had 5 or less isolations each, accounting for only 155 (0.8 percent) of the 19,723 isolations reported during 1967.

Typhoid Fever -- Cases and Carriers

Of 690 isolations of S. typhi reported in 1967, 95 were from cases of typhoid fever and 207 from asymptomatic carriers; for the remaining 388, the clinical classification was not reported. The sex distribution of typhoid cases showed no significant sex predilection (F:M = 1.1:1); however, for carriers, females predominated (F:M = 3.0:1). The age distribution of cases and carriers is shown in Figure 6. Most cases occurred in the younger age groups, with 70.1 percent of cases occurring in persons less than 20 years of age. In contrast, most carriers were in the older age groups, with 80.6 percent 50 years or older. The age distribution of unclassified isolations is a bimodal curve with a peak in the younger population presumably representing cases of typhoid fever and a later peak presumably representing carriers.

B. NONHUMAN

During 1967, 8,794 salmonella isolations from nonhuman sources were reported. This represents a 14.1 percent increase over the 7,709 isolations reported in 1966 (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 8 and Table V. The number and percent of isolations by source demonstrate the importance of poultry and poultry products as vehicles for salmonellosis. Turkey, chicken, eggs and egg products, which together were responsible for 48 percent of the food-borne outbreaks reported in 1967, accounted for 33.8 percent of all nonhuman isolations. Swine and cattle accounted for 16.2 percent of all nonhuman recoveries, and dried milk and other human foods, for 13.4 percent.

Isolations from animal feedstuffs accounted for 17.5 percent of nonhuman isolations during 1967. This represents a slight increase over 1966 and an almost threefold increase over previous years and reflects continued and increased interest in the surveillance of animal feeds.

The ten most common salmonella serotypes isolated from nonhuman sources during 1967 are listed in Table III. These ten serotypes comprised 55 percent of all nonhuman isolates.

The geographic distribution of serotypes isolated from nonhuman sources appears in Figure 9 and Table VI. Isolations were reported from all states except Alaska and Rhode Island. California reported the largest number of isolations (1,226), followed by Minnesota with 883 and Louisiana with 741. Geographic concentrations of isolations are thought to reflect interest factors in the various states rather than prevalence.

Sources (Table V)

Domestic and Wild Fowl and Their Products

During 1967, there were 2,689 isolations (30.6 percent of nonhuman isolations) from domestic and wild fowl and 553 isolations (6.3 percent) from eggs and egg products, compared to 3,455 (44.8 percent) and 409 isolations (5.3 percent) in 1966.

The five most commonly isolated serotypes from chickens and turkeys are shown in Table VIII. As in 1965 and 1966, S. heidelberg was the most common serotype isolated from turkeys, with 302 isolations (23.8 percent of isolations from this source), and was also the most common serotype isolated from chickens in 1967, with 221 isolations (19.4 percent).

The five most common serotypes isolated from eggs and egg products were S. oranienburg (14.6 percent), S. infantis (9.6 percent), S. tennessee (9.4 percent), S. typhi-murium (7.1 percent), and S. cerro (6.9 percent).

Domestic and Wild Animals

During 1967, there were 1,853 isolates reported from domestic and wild animals as compared to 1,227 reported during 1966. The five most common serotypes isolated from swine and cattle in 1967 are shown in Table VIII. As in 1966, the most common serotype isolated from swine in 1967 was S. derby (26.8 percent). S. cholerae-suis var. kunzendorf accounted for only 7.7 percent of the isolations from swine in 1967 as compared to 40 percent in 1965.

In 1967, 58.2 percent of all isolations from cattle were S. typhi-murium or S. typhi-murium var. copenhagen. The next most common serotypes from cattle were S. newport (6.3 percent) and S. derby (6.1 percent). S. dublin, a host-adapted serotype in cattle, accounted for 4.3 percent of isolations.

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 575 isolations from nonhuman sources (6.5 percent) compared with 271 isolations (3.5 percent) in 1966; no isolations were reported from this source prior to 1966. This increase in isolations reflects active surveillance of powdered milk plants initiated in 1966. The five most common serotypes found in dried milk were S. tennessee (18.6 percent), S. newington (16.2 percent), S. anatum (10.1 percent), S. cubana (8.0 percent), and S. binza (6.3 percent).

Animal Feed and Feed Ingredients

During 1967, there were 1,541 salmonella isolations (17.5 percent) reported from animal feed and feed ingredients as compared with 1,274 isolations (16.5 percent) during 1966. Of 810 contaminated animal feeds identified in 1967, 807 (99.6 percent) were feeds containing animal or poultry by-products, and only 3 were vegetable protein supplements. The most common serotypes isolated from animal feeds were S. eimsbuettel (13.4 percent), S. montevideo (9.2 percent), S. senftenberg (9.0 percent), S. anatum (6.4 percent), and S. oranienburg (4.0 percent).

Miscellaneous

Pet turtles continue to represent a source of salmonella contamination, with 53 isolates from this source.

Animal glandular products such as pancreatin and thyroid extract, which are intended mainly for medical use, continue to be a source of salmonellae, with 159 isolates from these sources in 1967 compared with 114 in 1966.

Rare Serotypes

Table VII lists 89 isolations of 57 rare serotypes from nonhuman sources. The most common nonhuman sources of rare salmonella serotypes were animal feeds and ingredients, accounting for 29 (32.6 percent) of the 89 isolations. Several nonhuman isolations were made in states recording human recoveries of the same rare serotypes.

V. SPECIAL REPORTS

A. Epidemic Patterns of *Salmonella new-brunswick* in the United States, 1963-1967

The following table illustrates the number of *S. new-brunswick* isolations from humans reported to the Salmonellosis Unit from January 1963 through December 1967:

Year Reported	Isolations of *S. new-brunswick*
1963	6
1964	4
1965	21
1966	53
1967	1

Detailed investigation of 29 cases reported from April 1965 to February 1, 1966, documented the fact that 20 (80 percent) of 25 primary cases had consumed instant nonfat dry milk prior to onset of illness. In April 1966, through the combined efforts of state and federal agencies, a widely distributed brand of instant nonfat dry milk was found to contain *S. new-brunswick*, and subsequent investigations demonstrated the establishment of a source of contamination in a single processing plant.

In April 1966, measures at the plant to stop the outbreak were implemented, including (1) recall of known contaminated lots of powder from the retail market, (2) monitoring of products for the presence of salmonellae, and (3) modification of equipment and procedures to eliminate contamination. It is likely that some lots of contaminated powder used for drinking, as well as that in a variety of other products, could have remained on retail shelves through the remainder of 1966.

Of 25 cases of *S. new-brunswick* reported to the Salmonellosis Unit from February 1, 1966, to December 31, 1966, 9 of the 19 primary cases gave histories of exposure to instant nonfat dry milk. However, in 1967, there was a striking decline in reported *S. new-brunswick* isolations, and the single case reported did not reveal any association with instant nonfat dry milk.

These data suggest that almost all *S. new-brunswick* infections reported in 1965 and 1966 were due to exposure to contaminated dried milk originating from a single milk drying and instantizing plant. The outbreak was terminated at the end of 1966 with the elimination of the source of contamination.

This outbreak indicates the importance of an alert nationwide salmonella surveillance program. Based on the careful investigation of a comparatively few cases, an interstate outbreak of salmonellosis was documented. This was the first demonstration that instant nonfat dry milk could be a vehicle for salmonellae and led to major improvements in the dry milk industry.

B. Nonfecal Isolations of Salmonellae

The most common clinical syndrome caused by salmonellae is febrile gastroenteritis. However, salmonellae may also cause enteric fever and septicemia with endocarditis, osteomyelitis, meningitis, or local abscesses.

Of 18,852 isolations of 151 different salmonella serotypes in 1967 (excluding S. typhi and S. paratyphi A, B, and C), 2,677 (14.2 percent), representing 85 different serotypes, were isolated from nonfecal sources, including 344 from blood (12.8 percent), 248 from urine (9.3 percent) and 2,085 (77.9 percent) from other sources (gallbladder, spinal fluid, sputum, etc.). Nonfecal isolations of the ten most common serotypes are presented in Table 1. S. typhi-murium was the serotype most commonly isolated from nonfecal sources, with 700 nonfecal isolations out of 5,530 isolations from all sources (12.7 percent). However, the percent nonfecal isolations of isolations from all sources was higher for S. heidelberg (20.9 percent), S. enteritidis (19.5 percent), and S. oranienburg (16.7 percent) than for S. typhi-murium. Of interest, 24 of 27 isolations of S. cholerae-suis and S. cholerae-suis var. kunzendorf (88.9 percent) were from nonfecal sources. Seventy serotypes, representing 263 isolates, were reported only from stool cultures.

Table 1

Nonfecal Isolations of the Ten Most Common

Salmonella Serotypes Isolated from Humans*, 1967

Serotype	Blood	Urine	Other	Total Nonfecal Isolations	Total Isolations All Sources	Percent Nonfecal Isolations
typhi-murium	114	47	539	700	5,530	12.7
heidelberg	45	28	272	345	1,648	20.9
enteritidis	59	22	168	249	1,277	19.5
newport	8	13	108	129	1,263	10.2
infantis	11	12	76	99	980	10.1
saint-paul	12	16	87	115	907	12.7
blockley	2	5	54	61	519	11.8
thompson	5	9	39	53	508	10.4
oranienburg	10	6	52	68	406	16.7
montevideo	8	5	35	48	398	12.1
Subtotal	274	163	1,430	1,867	13,436	13.9
*TOTAL (all serotypes)	344	248	2,085	2,677	18,852	14.2

*Excluding S. typhi and S. paratyphi A, B, and C

The age distribution of persons from whom nonfecal isolations were made is presented in Table 2. Of 13,743 isolates reported by source and age, 1,766 (12.8 percent) were from nonfecal sources. Nonfecal isolations were more frequent in the older age groups, comprising 11.7 percent of isolations from persons less than 50 compared with 20.5 percent of isolations from persons over 50. This difference is statistically significant ($p < 0.0005$). Separate analyses of age distribution for isolations from blood and urine demonstrate a similar preponderance in the elderly.

Table 2

Age Distribution of Persons

with Nonfecal Isolations of Salmonellae

Age	No. Nonfecal Isolations	Total Isolations All Sources	Percent Total
<10	811	7,682	10.6
10 - 19	235	1,489	15.8
20 - 29	162	1,238	13.1
30 - 39	98	819	12.0
40 - 49	94	730	12.9
50 - 59	109	659	16.5
60 - 69	122	569	21.4
70 - 79	97	365	26.6
>79	38	192	19.8
TOTAL	1,766	13,743	12.8

Table I
COMMON SALMONELLA SEROTYPES ISOLATED FROM HUMANS
IN THE UNITED STATES DURING 1967

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			1	16		1	18	2	8	4	5	9	28	3		17	6	4	30	2	1	1				4	4	1	3		4			21	16	45	anatum
bareilly				2		2	4		3	3	7		13	6		12		2	20	3		1			1	6		1		2		1	2	4	10	bareilly
berta				2		3	5		1	3	1		5			1	2	6	9											1		2		5	8	berta
blockley	4	1		81		16	102		7	29	6	19	61	18		31	32	4	85	3	5	6	1				15	4	12	3	7		10		21	33	90	blockley
braenderup	1		1	6	1	8	17		6	3	4	4	17	2	1	5		1	9			1				2				2				4	11	19	braenderup
bredeney				2		1	3		6	7	6	4	23	2		9	2	4	17	2		5				7	1		1	1		2		3		8	bredeney
chester						4	4					9	9	1		16	4	1	22	2	3	2		1		8		1		6		2		2	5	16	chester
cholerae-suis v. kun				1		1	2				1		1			5			5									4		4				1	1	10	cholerae-suis v. kun
cubana				10		1	11		2	1	1		4	6	1	5	3	5	20	4						4			1	2				1	9	13	cubana
derby			1	7		1	9		5	16	9	21	51	5	5	31	14	10	65	5		6			1	12	5	20	1	9	1	2		13	13	64	derby
enteritidis	6	3	3	152	1	47	212		51	87	49	91	278	60	28	162	50	32	332	19	8	24	1	1		6	59	4	55	15	34	3	58		64	26	259	enteritidis
give				4		2	6		1		3		4		1	2	4		7	1						1						6		1	2	9	give
heidelberg	12	3	7	71	3	15	111		43	67	44	82	236	95	28	70	70	19	282	13	1	142		2		7	165	2	36	9	32	1	117		60	63	320	heidelberg
indiana				4			4		2	3	2	9	16	4		4		2	10	1						1		1				2		11		14	indiana
infantis	8			46	4	9	67		23	25	24	65	137	24	14	66	24	25	153	12	10	13	4	1		46	86	3	20	4	24	1	19		29	32	132	infantis
java				18	2	11	31		3	16	11	28	58	16		46	1	12	75	6	2	6				2	16	1	5				5		11	26	48	java
javiana				1			1							24	1	6	6	1	38	2	1	6	2			2	13		2		3		1		13	99	118	javiana
kentucky					2	1	3			2	4	2	8	1		3	1		5	2						2	2	2						2	1	5	kentucky
litchfield					1		1		4	7		5	16	3	1	6	5	2	17	7						7		1		11		3		6	6	27	litchfield
livingstone												3	3	3		1	1	1	6	2		5				7		1		1				1		3	livingstone
manhattan				10		6	16		3	4		14	21	16	2	24	17	7	66	4	3	24				2	33		8	1	5	1	3		19	22	59	manhattan
meleagridis				1		1										1			1																3	3	meleagridis
miami						2	2			3	2		5			1	1		2																7	52	59	miami
mississippi																1			1											2					11	2	15	mississippi
montevideo				16		10	26	1	15	82	7	14	119	13	3	28	16	2	62	14	2	8			1	4	29		4		8		3		10	16	41	montevideo
muenchen	1			10	1	1	13		6	10	7	4	27	6	5	3	7	5	26	3	3	9		1		9	25		2		5		1		6	33	47	muenchen
newington				3			3		3	1	1	3	8			3	1		4	2						1	3	1	1		1				1	2	6	newington
newport	1		1	13	8	7	30		23	45	19	52	139	20	1	62	35	13	131	9	7	7	1			17	41	3	5	1	19	10	13		36	192	279	newport
oranienburg				13		2	15	1	13	19	19	8	60	12	2	19	9	12	54	18	6	2		1		7	34	5	6	1	4		6		14	48	84	oranienburg
panama			1	5		2	8		7	7		3	17			13	1	8	22	4	1	2	2			5	14		1	1	1				1		4	panama
paratyphi B				58			58		12	3	1		16	2	5	2	16		25	1	3					4		6		9	1				1	17	paratyphi B
poona									1	2			3	1		2	1		4					1		1		1				2		1	14	18	poona
saint-paul	5		1	38		15	59		31	33	26	46	136	23	3	92	27	42	187	25	6	12	1	1		6	51	4	27	3	48		28		76	50	236	saint-paul
san-diego		2		53		4	59		3	4	1	3	11	1	1	7	2	5	16			2				2		2		3		2			5	12	san-diego
schwarzengrund				22		2	24			1			1	2	1	3	1		7						1	1		4		1				1	4	10	schwarzengrund
senftenberg				4		1	5		3	2			5			6	1		7															3	7	10	senftenberg
tennessee	1			8		1	10		3	7	3	3	16	1		1		1	3	3		1	1			5				1		3		1	3	8	tennessee
thompson				26	7	14	47		26	29	15	31	101	13		17	16	19	65	4	1	2	1	1		5	14	6	14	4	15	1	22		25	58	145	thompson
typhi	2			23	1	6	32	4	10	21	3	19	57	35	14	12	15	4	80	4		17				6	27		22	4	7	8	37		19	35	132	typhi
typhi-murium	24	1	7	186	30	113	661	7	179	293	124	280	883	170	76	426	237	157	1,066	70	31	124	10	9	10	131	385	10	129	19	103	13	119	2	156	241	792	typhi-murium
typhi-murium v. c.	2			63		39	104				28	43	71				48		48		2					2				2						2	typhi-murium v. c.
urbana										1	1	1	3			3	1	1	5			1				1					3		2		5	urbana
weltevreden									2				2																								weltevreden
worthington														1	3	2			6			1				1				2			2	1	5	worthington
untypable group B	1	35		6	4	1	47		2	5	1		8	2	4	8			14	2	5	66			10		83			52	1		4	2	7	66	untypable group B
untypable group C1		2			1	1	4							1			2		3											5		2			7	untypable group C1
untypable group C2		2					2								1				1			37				37				3					2	5	untypable group C2
untypable group D		7					7			1			1			1			1		1					1				21						21	untypable group D
untypable group E					1		1																							1	1					2	untypable group E
untypable or unknown		3		1	3	1	8	10		5			15		2	2		26	30		3		12		1	16		2	12		1		1	1	2	19	untypable or unknown
Total Common	68	59	23	1,282	70	351	1,853	25	507	851	435	875	2,693	589	199	1,234	689	433	3,144	249	105	533	36	19	23	260	1,225	52	399	163	379	44	471	7	660	2,152	3,327	Total Common
Total Other	0	1	0	20	2	3	26	1	23	10	9	32	75	12	7	25	10	7	61	14	8	15	0	1	1	1	40	3	6	3	12	0	17	0	30	75	146	Total Other
Grand Total	68	60	23	1,302	72	354	1,879	26	530	861	444	907	2,768	601	206	1,259	699	440	3,205	263	113	548	36	20	24	261	1,265	55	405	166	391	44	488	7	690	2,227	3,473	Grand Total

NEW YORK (A-ALBANY, BI-BETH ISRAEL, C-CITY)

Table I (Continued)

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																							1967 TOTAL	% of 1967 TOTAL	1966 TOTAL	% of 1966 TOTAL	1967 NON-HUMAN	% of 1967 NON-HUMAN	SEROTYPE
	EAST SOUTH CENTRAL					WEST SOUTH CENTRAL					MOUNTAIN									PACIFIC										
	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						
anatum	1	3	3		7	1	29	1	3	34				6		4			10			77		44	121	297	1.5	333	1.7	521	5.9	anatum
bareilly						3	15		3	21												5		2	7	81	0.4	78	0.4	51	0.6	bareilly
berta							2			2						2	1		3	1		2		2	5	37	0.2	34	0.2	13	0.1	berta
blockley		4	6	1	11	3	23	1	20	47	3	2		4		1	3		13	21	12	55	1	6	95	519	2.6	603	3.0	115	1.3	blockley
braenderup		4			4		2		4	6												5		4	9	83	0.4	111	0.6	84	1.0	braenderup
bredeney	1	1			2		9		5	14				7		1	1		9	1	1	21		14	37	120	0.6	159	0.8	174	2.0	bredeney
chester	6	14	4		24									1			1		2		4	10	1		15	100	0.5	109	0.5	52	0.6	chester
cholerae-suis v. kun			1		1																	1			1	20	0.1	26	0.1	78	0.9	cholerae-suis v. kun
cubana		2	1		3	1	2		4	7											1	3			4	66	0.3	131	0.7	243	2.8	cubana
derby	2	2			4	2	19	1	10	32	1		1	4		2			8		3	33		45	81	326	1.7	404	2.0	458	5.2	derby
enteritidis		8	5	1	14	3	13	5	12	33	1	1		10			14		26	7	2	52		3	64	1,277	6.5	1,237	6.2	128	1.5	enteritidis
give			1		1		15	1	8	24												4		5	9	61	0.3	78	0.4	55	0.6	give
heidelberg	5	21	6		32	10	42	9	30	91	1	3		10		24	34		72	34	22	256		27	339	1,648	8.4	1,622	8.1	665	7.6	heidelberg
indiana	1	1	1		3				1	1																49	0.2	65	0.3	30	0.3	indiana
infantis	7	16	6		29	4	38	14	39	95	3	2		32		5	6		48	15	8	133	1	76	233	980	5.0	1,315	6.6	424	4.8	infantis
java		4	6		10	1	29	2	1	33	1		1			1			3			34		1	35	309	1.6	367	1.8	28	0.3	java
javiana		3	3	3	9	21	31	5	127	184				1		3			4			6			6	373	1.9	312	1.6	32	0.4	javiana
kentucky							3		2	5						2	1		3			5		4	9	40	0.2	38	0.2	91	1.0	kentucky
litchfield				1	1		1	1		2	1								1			9			9	81	0.4	97	0.5	4	0.0	litchfield
livingstone						1			3	4												7		24	31	55	0.3	31	0.2	71	0.8	livingstone
manhattan	4	7			11		6	1	5	12	1			2		1			4	4	4	32		22	62	284	1.4	134	0.7	38	0.4	manhattan
meleagridis		1			1		1			1																7	0.0	8	0.0	53	0.6	meleagridis
miami			1		1																					69	0.3	83	0.4	13	0.1	miami
mississippi						1	31		8	40				1					1			1			1	58	0.3	55	0.3	4	0.0	mississippi
montevideo		6	3		9	1	13	15	25	54	2			3		1	2		8	1	1	42		6	50	398	2.0	337	1.7	335	3.8	montevideo
muenchen		3	4	1	8		16	8	14	38	1			1		4			6	4	1	21		1	27	217	1.1	229	1.1	96	1.1	muenchen
newington	1	3		1	5		3			3				1					1		1	5		4	10	43	0.2	53	0.3	153	1.7	newington
newport	3	13	9	5	30	35	87	24	220	366		4		8		20	2		34	7	1	185		20	213	1,263	6.4	1,319	6.6	154	1.8	newport
oranienburg	2	2		1	5	2	18	13	58	91				2		6	2	4	14	9	6	29		5	49	406	2.1	399	2.0	260	3.0	oranienburg
panama		1	1		2	1	2		7	10				3		9			12	3		11		79	93	182	0.9	274	1.4	62	0.7	panama
paratyphi B		3			3			2	21	23	1			4		2			7	12	2	6			20	173	0.9	153	0.8	3	0.0	paratyphi B
poona		1			1		2		7	9						2			2			20			20	58	0.3	40	0.2	18	0.2	poona
saint-paul	2	8	4		14	1	23		3	27	4			8		4	26		42	31	23	85	2	14	155	907	4.6	737	3.7	381	4.3	saint-paul
san-diego			1		1	1	1		5	7				1		1	2		4	12	2	21		2	37	149	0.8	122	0.6	91	1.0	san-diego
schwarzengrund		1			1		2		2	4				1			1		2	3		13		6	22	72	0.4	71	0.4	152	1.7	schwarzengrund
senftenberg	1	1			2		15	1	5	21											1	6		1	8	58	0.3	72	0.4	274	3.1	senftenberg
tennessee	1	1	1		3		4		3	7		2				1			3	1	1	2		4	8	63	0.3	133	0.7	322	3.7	tennessee
thompson	2	2	8	1	13	3	9	1	8	21				1			6		7	6	10	72	2	5	95	508	2.6	579	2.9	209	2.4	thompson
typhi	17	12	7		36	31	56	9	16	112	3		1	13	6	5			28	5	20	153	5	3	186	690	3.5	654	3.3	3	0.0	typhi
typhi-murium	15	69	40	7	131	32	139	55	222	448	22	10	1	134		37	13	15	232	185	23	614	1	109	932	5,530	28.0	5,744	28.7	896	10.2	typhi-murium
typhi-murium v. c.		6			6	6	18			24	1	1				2			4		12				12	273	1.4	178	0.9	250	2.8	typhi-murium v. c.
urbana									1	1												3			3	18	0.1	28	0.1	20	0.2	urbana
weltevreden																								59	59	61	0.3	45	0.2	2	0.0	weltevreden
worthington							1		1	2				1		1			2			4		4	8	24	0.1	44	0.2	127	1.4	worthington
untypable group B			2	32	34	21		2	26	49	11		1		153	1			166		7	14	5		26	493	2.5	312	1.6	31	0.4	untypable group B
untypable group C1	2			1	3	4		1	14	19					97				97			3	2		5	138	0.7	140	0.7	30	0.3	untypable group C1
untypable group C2	1			14	15	13		1	20	34					37				37			1			1	132	0.7	61	0.3	1	0.0	untypable group C2
untypable group D				1	1	10			9	19					14	1			15		10	1			11	77	0.4	54	0.3	5	0.1	untypable group D
untypable group E				5	5				16	16					11				11				1		1	36	0.2	13	0.1	6	0.1	untypable group E
untypable or unknown				10	10				96	96	1		1		2		1		5		4	2			6	205	1.0	81	0.4	20	0.2	untypable or unknown
Total Common	74	223	124	85	506	212	720	173	1,084	2,189	58	25	6	260	320	142	117	19	947	362	182	2,064	21	601	3,230	19,114						Total Common
Total Other	4	11	6	2	23	9	38	6	49	102	0	4	0	7	4	6	4	0	25	6	6	64	1	34	111	609						Total Other
Grand Total	78	234	130	87	529	221	758	179	1,133	2,291	58	29	6	267	324	148	121	19	972	368	188	2,128	22	635	3,341	19,723		20,040		8,794		Grand Total

Table II

OTHER SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING 1967

SEROTYPE	REPORTING CENTER																												
	ALA	ALAS	AR	ARK	CALIF	COLO	CONN	DEL	DC	FLA	GA	HAI	IDA	ILL	IND	IOWA	KAN	KY	LA	ME	MD	MASS	MICH	MINN	MISS	MO	MONT	NEBR	NEV	NH	NJ	NM
abortis-bovis											1			1																	
agona																			1												
adelaide					2					1																					
alabama				1																											
alachua			1		2							1										4	1	1		1					
albany			1											1					2		1										
amager																															
atlanta											11																				
bali																										1					
belem																															
berlin																															
binza					1						5								1					1	1	2					
bovis-morbificans												3										1									
bradford						1																									
brancaster																															
brandenburg														1																	
california				1	2	2			1					1	3				1												
cambridge					1																										
carrau										1				2																	
cerro										1		1		1	2			1	1												
cholerae-suis	1				1				2													1								1	
claiborne																															
colorado												1																			
concord																								1							
denver																															
drypool																														1	
dublin					7																	1									
duesseldorf																															
duisburg																															
durban																															
durham					1									1							1			4							
eastbourne			1																												
eimsbuettel										6	3			1					4											1	
emek														1																	
eppendorf																														1	
essen																4															
fayed																															
florida										1													1								
frintorp														1																	
gallinarum																															
gaminara			1		1						1								3												
garoli																															
gatow																															
gatuni																															
georgia																										3					
glostrup																								1							
grumpensia												1																			
haarlem																															
habana										14	1																				
halmstad																															
hartford										8	3	1			1							1	1	1							
heilbron						1						1																			
ibadon					1																										
illinois					1																										
inverness										3									1												
irenea																						1									
irumu					1	2						4														4					
israel																															
johannesburg							1		1													1		1							
kaapstad																1															
kottbus					2									1																	
kunduchi																															
lexington					1																										
lindenburg																															
loma-linda			1		4																										
lomita																															
london					1							1																			
luciana	1																														
medellin				1						3	1			1																	
mancheater																		1													
memphis										1																					
minnesota					6					4	1				1								3			1					
mission	1											5					1									1				2	
missouri																															
muenster					3					14				1									1	1							
nagoya																															
naraahino					1																										
new-brunswick																								1							
new-haw					1																										
nigeria																															
norwich										1	1								8												
nottingham																															
ohio					1														1												
orion			1		1																1										
oritamerin																		1													
oslo					2							14														1					
paratyphi A	1				1				1		1																				
paratyphi C																							1								
pensacola																			2		1	1									
pharr														1																	
pomona					1																										
pullorum														2									1								
reading	1	1			13	1	2						4	2		1		1				8					1				
richmond										1																					
rubislaw				1						5									10							1					
saphra																			1												
siegburg	1													4					1		1		1	1							
simsbury											1																				
singapore					1																										
stanley																														1	
sundsvall																															
takoradi																													1		
taksony												1																			
tallahassee										4																					
thomasville					2																										
uganda										1																					
vejle																2															
virchow					1					1												1									
wagenia														1																	
westerstede										1																					
worcester														1																	
untypable Group A																														1	
untypable Group C									1																1						
untypable Group F																														1	
untypable Group G				2						1																					
untypable Group H				3						2																				2	
untypable Group I																															
untypable Group K																			1												
untypable Group M										1																					
untypable Group O					1																1			1							
Total	6	1	6	9	64	7	3	3	3	75	30	34	4	25	7	8	1	4	38	0	6	20	10	14	2	15	0	1	0	1	9	4

Table II (Continued)
OTHER SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING 1967

REPORTING CENTER																					1967 TOTAL	1966 TOTAL	1967 Non-Human TOTAL	SEROTYPE
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				
																						2	2		abortis-bovis
																		1				1			agona
																						4		1	adelaide
																						1			alabama
												2										13	6	123	alachua
																						5	14	30	albany
		1						1														2	3	8	amager
																						11	19		atlanta
																						1	2		ball
																				2		2			belem
								13														13	2	1	berlin
					1			1				1										14	24	142	binza
	1												1									6	12		bovis-morbificans
																						1	4		bradford
																		1				1			brancaster
													1									2	2		brandenburg
	1	1										1	2									16	15	22	california
																						1			cambridge
																						3	6	2	carrau
1												1										9	12	120	cerro
					1																	6	10	14	cholerae-suis
																						1			claiborne
													2									3	1	1	colorado
																1						2	1		concord
													3									3	2		denver
			1																			1	2	25	drypool
					1																	8	4	22	dublin
																						1	6	10	duesseldorf
					1																	1	4	1	duisburg
														2								2			durban
		1																				8	3		durham
																						1		2	eastbourne
			10						1													26	17	308	eimsbuettel
																						1			emek
																						1			eppendorf
																						4			essen
			1																			1	9		fayed
																						2			florida
																						1			frintorp
		1																				1	1	12	gallinarum
													1									7	10	9	gaminara
													1									1	1		garoli
													1									1		5	gatow
																				1		1			gatuni
																						3		1	georgia
																						1	2		glostrup
		1																				1	2	3	grumpensis
																						1			haarlem
																						15	3	8	habana
	1																					1		16	halmstad
			1					4				1						1				22	33	1	hartford
																						3			heilbron
													1									2	2		ibadon
																						1		9	illinois
																						4	2		invermess
							1															1			irenea
							1															12	8	2	irumu
																						1			israel
	6				1									2						2		15	1	17	johannesburg
																						1	1		kaapstad
																						3	1	3	kottbus
																	2					2			kunduchi
	2																					3		20	lexington
													1				1					2		1	lindenburg
							1															6	7	1	loma-linda
	1							1					1				1					4	2		lomita
			1																			3	1	2	london
													1									2	1		luciana
								1					1									8	3	6	madelia
																						2	3	1	manchester
																						1			memphis
			1		1								4									22	8	54	minnesota
					5			3									1						19	6	1	mission
						1																1			missouri
						3		1				1										25	27	11	muenster
													1									1	1		nagoya
																						1			narashino
																						1	53	2	new-brunswick
																		1				2	9	2	new-haw
													1									1			nigeria
												3										13	28	6	norwich
													1									1	1		nottingham
	1				2																	5	12	2	ohio
								2														6	3	26	orion
																						1	1		oritamerin
	1																	1				19	26	2	oslo
		1											1					1				7	7		paratyphi A
																						1	1		paratyphi C
																1						5			pensacola
																						1			pharr
																						1	4	2	pomona
	3	1	1				3	2			1		5				3					3	10	42	pullorum
	1						1					1	4									54	105	100	reading
																						1			richmond
																						24	30	15	rubislaw
							1						9									11	13	1	saphra
	1																					10	14	51	sieghurg
	3																					4	5	5	simsbury
																						1			singapore
		1						3					1								1	7	6	1	stanley
																						1	3	2	sundsvall
		1																				2			takoradi
																						1		3	taksony
	1												1									6	7		tallahassee
		1																				3	5	30	thomasville
																						1			uganda
																						2		1	vejle
																					1	4	4		virchow
																						1			wagenia
																						1	6	1	westerstede
																						1			worcester
																						1	1		untypable group A
																						2			untypable group C
																						1			untypable group F
			1										2				1					7	6		untypable group G
									1				2									9	2		untypable group H
																						1			untypable group I
																						1		12	untypable group K
																						1		2	untypable group M
																						3	3	4	untypable group O
1	23	10	17	0	12	6	6	32	2	0	1	11	49	4	0	12	0	6	0	7	0	609			Total

Table III. – *Ten most common serotypes isolated in the United States, 1967*

Serotype	Human			Nonhuman		
	Rank	Number	Percent	Rank	Number	Percent
S. typhi-murium and typhi-murium v. copenhagen	1	5,803	29.4	1	1,146	13.0
S. heidelberg	2	1,648	8.4	2	665	7.6
S. enteritidis	3	1,277	6.5			
S. newport	4	1,263	6.4			
S. infantis	5	980	5.0	5	424	4.8
S. saint-paul	6	907	4.6	6	381	4.3
S. typhi	7	690	3.5			
S. blockley	8	519	2.6			
S. thompson	9	508	2.6			
S. oranienburg	10	406	2.1			
S. anatum				3	521	5.9
S. derby				4	458	5.2
S. montevideo				7	335	3.8
S. tennessee				8	322	3.7
S. eimsbuettel				9	308	3.5
S. senftenberg				10	274	3.1
Subtotal		14,001	71.0		4,834	55.0
Total all serotypes		19,723			8,794	

Table IV. – *Age and sex distribution of 19,723 individuals reported as harboring salmonellae during 1967*

Age (years)	Male	Female	Unknown	Total	Percent	Cumulative Percent
Under 1	1,342	1,224	32	2,598	18.9	18.9
1–4	1,922	1,555	16	3,493	25.4	44.3
5–9	870	717	4	1,591	11.6	55.9
10–19	743	742	4	1,489	10.8	66.7
20–29	525	711	2	1,238	9.0	75.7
30–39	329	486	4	819	6.0	81.7
40–49	289	437	4	730	5.3	87.0
50–59	301	356	2	659	4.8	91.8
60–69	266	303	0	569	4.1	95.9
70–79	126	237	2	365	2.7	98.6
80+	75	116	1	192	1.4	100.0
Subtotal	6,788	6,884	71	13,743		
Child (unspec.)	86	84	19	189		
Adult (unspec.)	86	141	5	232		
Unknown	2,530	2,468	561	5,559		
Total	9,490	9,577	656	19,723		
Percent	49.8	50.2				

TABLE V

SALMONELLA SEROTYPES ISOLATED FROM NONHUMAN SPECIMENS IN THE UNITED STATES DURING 1967 BY SOURCE

SEROTYPE	FOWL								ANIMALS												HUMAN DIETARY FOODS									
	DOMESTIC								DOMESTIC																					
	chicken	turkey	other, pet and unknown environment		total domestic	wild	unknown wild fowl & 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	dry milk	other	unknown	total food
alachua	1	4			5			5	33	1						34	4			43	1	10	3	2			8	28			52
albany	1	5			6		2	8																				15			15
albuquerque																															
amager	2				2	1		3																							
anatum	21	55		2	78	3		81	75	24	3		5			107	15	4	2	209	11	6	11		1	4	48	58		1	140
bareilly	2		1	1	4			4	1	4			2			7			1	12		2	1	4			9			16
berta	1				1			1		11						11				12										
binza	5	6	1	1	13			13	2				1			3	1			17							7	36	3		46
blockley	48	34			82	3		85	5							5			1	91	2	2	2	2			4				12
braenderup	14				14			14	7	2			9			18	9			41	2		1	5			3				11
bredeney	14	11		1	26			26	37						1	38		3		67	6			1		2	5	1	1		16
california	5	1			6	1		7									2	1		10										
cerro	6	5		2	13		1	14	1							1				15	14	8		16		1		4	6		49
chester	3	43			46			46											1	47							2				2
cholerae-suis									13							13				13											
cholerae-suis v. kun									74		1					75				75										
cubana	2	4			6			6									1	1		8	1	2				3	74	46	1		127
decatur																								5							5
derby	7	22		1	30		1	31	258	28		1	1	1		289	3		1	324	8	2		1	2	8	32	3			56
drypool									1				5			6				6											
dublin										20						20				20										
duesseldorf							7	7	1							1				8										
duval																			4	4										
eimsbuettel	21	2	3	5	31	1		32	5				3			8				40	1	3	7	2		3	22			38
enteritidis	51	14			65			65	6	5						11	3	14		93	5						15	1	1	22
gallinarum	5		1		6		1	7												7			5							5
gaminara									1			1	3			5				5										1
gatow																								1						1
give	3	9		4	16			16	17	1						18	2			36		3		1			1			5
habana																							1	2						3
halmstad				1	1			1																						
heidelberg	221	302	3	1	527		5	532	46	14			3	3		66	6	4	1	609	9		4	4	1	1	2	1			22
hvittingfoss																											5				5
illinois				1	1			1												1										
indiana	6	4			10	2	2	14	1							1			2	17	4		3	3		1				11
infantis	162	22	4	10	198	4	4	206	17	8	4		7	3		39	2	4		251	24	15	7	7	2	2	20	14		1	92
jav.									2				1			3				3								2			2
javiana	1	1			2			2	1	6			1	1		9		6		17							2		1		3
johannesburg													3			3				3											
kentucky	4	4			8		3	11	3	2						5				16		1						2			3
lexington									1	1						2				2						2		2			6
litchfield	2				2			2									1			3											
livingstone	13	6	5		24		1	25	1	2						3				28	1					13	1				15
madelia																															
manhattan	4	6	1		11			11	15				2	1		18		3		32											
mahlo																															
marina																															
meleagridis	2	9			11		1	12	4	1						5				17						1		23			24
miami										1				1		2				3									10		10
minneapolis																												31			31
minnesota	2	1			3		2	5	2	6						8	2			15											
mississippi									2							2				2											
montevideo	40	21	6	1	68		5	73	5	2			1			8	1	1		83	4	13	9	7		3	16	29	7	3	91
muenchen	4	12	1		17	3		20	7				1	1		9	5			34	1					1	12				14
muenster	5				5			5	4							4				9											
newington	5	4			9			9	3							3		1		13	2	4		1			19	93			119
newport	7	23			30			30	22	29	2		10	1		64	3	12		109	1					1	2	6	1			11
norwich			1		1			1		4						4				5			1									1
oranienburg	11	1		1	13			13	6	1	1	1	1			10	4			27	51	8	18	4		6	9	28	1		122
orion		1			1			1																				2			2
panama	3	42			45			45	13							13				58			2								2
poona	2				2			2			1	1				2				4			3				1	1			5
pullorum	33	3			36		5	41												41			1								1
reading	5	70			75		1	76	1	3						4				80			2				1				3
rhone																															
rubislaw									2							2	1			3	1	10									11
saint-paul	50	157	4	3	214	2	8	224	91	6	1		3			101	7	3	1	336	5		1	2	1	4	1				13
san-diego	6	51		1	58			58	2	1				2		3				63							8	1			9
schwarzengrund	12	74		1	87	3	1	91	12							12	2	1		106	1	2		1				3			7
senftenberg	9	48		7	64	1		65	2	1			1			4		1		70		3				11	25	3	3		42
siegburg	5				5			5	2				1			3				8	5		7				1	4			17
simsbury																						2									2
tennessee	10	47	1	2	60			60	7							7				67	24	9	1	18		2	28	107	6		194
thomasville	1				1			1	6							6				7											
thompson	97	13	8	2	120		4	124			1					1				125	12	1	5	2		6	28			2	56
typhi-murium	92	77	18	3	190	11	32	233	114	235	48	5	19	19	2	442	11	32	1	719	21		12	6	1	3	19	17	1		80
typhi-murium v. cop	85	37	32	2	156	3	6	165	5	34	5	2	1		2	49	7	5	1	227	1		7				1	1			10
typhi-suis									9							9				9											
urbana									1							1				1											
westhampton	1	3			4			4	1							1				2											
worthington	15	6			21	1	1	23	4				1			5		3	1	12	3	5	2			1	2	15			28
untypable group B	6	2			8			8		5			1			6		5		14					1		1				2
untypable group C-1	2				2			2	3							3		2		7						13	2				15
untypable group D		1			1			1												1				1			1		1		3
untypable group E									1							1				1							1	1			2
untypable group K																						1	2				2				5
untypable group O		1			1			1		1						1				2											
untypable/unknown	1	3	2		6			6										1		7							1		1		2
TOTAL	1,136	1,267	92	53	2,548	39	93	2,680	955	459	67	11	86	33	5	1,616	92	107	17	4,512	221	112	118	98	11	93	445	573	43	7	1,721

TABLE V (Continued)
SALMONELLA SEROTYPES ISOLATED FROM NONHUMAN SPECIMENS IN THE UNITED STATES
DURING 1967 BY SOURCE

ANIMAL FEED				OTHER						1967 Total	% of 1967 Total	1966 Total	% of 1966 Total	1967 Human Total	% of 1967 Human Total	SEROTYPE
animal protein	vegetable protein	unknown	total feed	Cold blooded Vertebrates: turtles	other, unknown * and environment	water	animal glandular products	other	unknown							
10		14	24					3	1	123	1.4	30	0.4	13	0.1	alachua
3			3				2	2		30	0.3	2	0.0	5	0.0	albany
						7				7	0.1	0	---	0	-	albuquerque
5			5							8	0.1	4	0.1	2	0.0	amager
57		42	99	3	1	2	23	36	8	521	5.9	441	5.7	297	1.5	anatum
9		7	16		1		3	2	1	51	0.6	30	0.4	81	0.4	bareilly
				1						13	0.1	7	0.1	37	0.2	berta
14		30	44				2	24	9	142	1.6	85	1.1	14	0.1	binza
1		3	4			4		2	2	115	1.3	194	2.5	519	2.6	blockley
		1	1	2		4		23	2	84	1.0	38	0.5	83	0.4	braenderup
25		12	37	1		3	5	26	19	174	2.0	86	1.1	120	0.6	bredeney
6		5	11					1		22	0.3	33	0.4	16	0.1	california
28		14	42					4	10	120	1.4	66	0.9	9	0.0	cerro
		1	1			2				52	0.6	153	2.0	100	0.5	chester
									1	14	0.2	6	0.1	6	0.0	cholerae-suis
								1	2	78	0.9	94	1.2	20	0.1	cholerae-suis v. kun
19		28	47			4	23	33	1	243	2.8	219	2.8	66	0.3	cubana
										5	0.1	0	-	0	-	decatur
24		31	55			3	5	10	5	458	5.2	266	3.5	326	1.7	derby
12		7	19							25	0.3	15	0.2	1	0.0	drypool
							1		1	22	0.3	39	0.5	8	0.0	dublin
1			1					1		10	0.1	0	-	1	0.0	duesseldorf
										4	0.0	0	-	0	-	duval
106		101	207				12	9	2	308	3.5	198	2.6	26	0.1	eimsbuettel
6			6	2	1	1		2	1	128	1.5	87	1.1	1,277	6.5	enteritidis
										12	0.1	23	0.3	1	0.0	gallinarum
1			1			2	1			9	0.1	2	0.0	7	0.0	gaminara
						4				5	0.1	0	-	1	0.0	gatow
5		4	9	3		1	1			55	0.6	55	0.7	61	0.3	give
		4	4					1		8	0.1	2	0.0	15	0.1	habana
2		11	13					2		16	0.2	12	0.2	1	0.0	halmstad
5		8	13			4		7	10	665	7.6	786	10.2	1,648	8.4	heidelberg
										5	0.1	0	-	0	-	hvittingfoss
8			8							9	0.1	7	0.1	1	0.0	illinois
1		1	2							30	0.3	34	0.4	49	0.2	indiana
47		11	58	2		2		14	5	424	4.8	368	4.8	980	5.0	infantis
		1	1	8		13			1	28	0.3	51	0.7	309	1.6	java
		2	2			6		4		32	0.4	8	0.1	371	1.9	javiana
9		1	10		1	1	1		1	17	0.2	4	0.1	15	0.1	johannesburg
28		29	57			2	1	9	3	91	1.0	46	0.6	40	0.2	kentucky
3		4	7			3		4		20	0.2	15	0.2	3	0.0	lexington
		1	1							4	0.0	19	0.2	81	0.4	litchfield
9		17	26					2		71	0.8	86	1.1	55	0.3	livingstone
							6			6	0.1	2	0.0	8	0.0	madelia
2		2	4			1			1	38	0.4	42	0.5	284	1.4	manhattan
2		2	4							4	0.0	12	0.2	0	-	manila
				4						4	0.0	0	-	0	-	marina
3		1	4			5	3			53	0.6	25	0.3	7	0.0	meleagridis
						1				13	0.1	4	0.1	69	0.3	miami
1			1			1		1		34	0.4	3	0.0	0	-	minneapolis
11		23	34					4	1	54	0.6	51	0.7	22	0.1	minnesota
						2				4	0.0	2	0.0	58	0.3	mississippi
95		47	142			2		12	5	335	3.8	346	4.5	398	2.0	montevideo
1		1	2	1	1	5	36	3		96	1.1	69	0.9	217	1.1	muenchen
1		1	2							11	0.1	22	0.3	25	0.1	muenster
2		7	9					10	2	153	1.7	82	1.1	43	0.2	newington
3		8	11	8		10	1	1	3	154	1.8	159	2.1	1,263	6.4	newport
										6	0.1	7	0.1	13	0.1	norwich
27		34	61		1	1	1	23	21	260	3.0	183	2.4	406	2.1	oranienburg
14		4	18					4	1	26	0.3	25	0.3	6	0.0	orion
		1	1				1			62	0.7	23	0.3	182	0.9	panama
							8	1		18	0.2	20	0.3	58	0.3	poona
										42	0.5	57	0.7	3	0.0	pullorum
1		12	13					3		100	1.1	53	0.7	54	0.2	reading
							5			5	0.1	0	-	0	-	rhone
				1						15	0.2	11	0.1	24	0.1	rubislaw
8		9	17	4	1			3	6	381	4.3	334	4.3	907	4.6	saint-paul
					7	3		2	7	91	1.0	110	1.4	149	0.8	san-diego
16		6	22	2	2		3	4	6	152	1.7	276	3.6	72	0.4	schwarzengrund
83		56	139			1	2	15	2	274	3.1	188	2.4	58	0.3	senftenberg
16		6	22					2	2	51	0.6	37	0.5	10	0.1	siegburg
	1	2	3							5	0.1	9	0.1	4	0.0	simsbury
16	1	14	31					19	10	322	3.7	206	2.7	63	0.3	tennessee
9		3	12			2		9		30	0.3	29	0.4	3	0.0	thomasville
7		3	10	2	1	7		2	6	209	2.4	203	2.6	508	2.6	thompson
3		15	18	1	1	35	6	20	16	896	10.2	884	11.5	5,530	28.0	typhi-murium
1		3	4	1		2		6		250	2.8	203	2.6	273	1.4	typhi-murium v cop
										9	0.1	7	0.1	0	-	typhi-suis
7		3	10	4		5				20	0.2	18	0.2	18	0.1	urbana
16		8	24							29	0.3	1	0.0	0	-	westhampton
9		30	39				5	19	4	127	1.4	116	1.5	24	0.1	worthington
				1	3			4	2	31	0.4	19	0.2	493	2.5	untypable group B
1		1	2					6		30	0.3	3	0.0	138	0.7	untypable group C-1
				1						5	0.1	0	-	77	0.4	untypable group D
1		2	3							6	0.1	3	0.0	36	0.2	untypable group E
		6	6				1			12	0.1	11	0.1	1	0.0	untypable group K
2			2							4	0.0	10	0.1	3	0.0	untypable group O
2	1	5	8	1				2		20	0.2	32	0.4	205	1.0	untypable/unknown
804	3	705	1512	53	28	144	158	397	180	8794*		1709*		19723*		TOTAL

*INCLUDES RARE SEROTYPES

TABLE VI
REPORTED NONHUMAN ISOLATES BY SEROTYPE AND STATE DURING 1967

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						4	4				1		1	3	34		6		43	9	4	7			3		23			1						1	alachua
albany														2		3			5		2					2										albany
albuquerque																										7	7									albuquerque
amager																4			4	1						1										amager
anatum		1				9	10	1			38	5	44	46	10	84	12	6	158	65	6	10			8	3	92		2	9	5				5	6	27	anatum
bareilly								1			1	1	3	2	2	8		1	13	6	4	2			1		12			9					4	13	bareilly
berta																1			1															1		1	berta
binza		2				6	8	12			2	1	15	2	7	36	1	6	52	23	1				1	6	31		2		3	1			2	5	13	binza
blockley				5		1	6				1		1	1	7	3		4	15	9	1	3				2	15				3		1		12	1	17	blockley
braenderup				1		38	39				1		1		1				1		8					2	10								1	2	3	braenderup
bredeney		1				5	6	2					2		2	11	3	2	18	57	6	5			2	1	71			2					5	3	10	bredeney
california	1			1			2				1		1	2	3	1			6	1	2						3		1	1					3		5	california
cerro						4	4	1			2	3	6	15	8	10		1	34	26	1	21			4	3	55			4		1			2	7	cerro
chester						1	1					1	1	2	5	1		8	16	12	1	5					18				1				6		7	chester
cholerae-suis														5					5												2		6			8	cholerae-suis
cholerae-suis v kun				1			1								16	4	5		25		4	2		1	1	8				2		20	6	3		31	cholerae-suis v kun
cubana				40		5	45	13			7		20	2	42	40	16	8	108	12	1					11	24			10					2	2	14	cubana
decatur																										5	5										decatur
derby								1			3	1	5	17	19	13	17	29	95	6	4					6	16		3	2	1		1	1	1	2	11	derby
drypool						1	1				1		1	4	1		8		13	4						4	8										drypool
dublin								1					1																								dublin
duesseldorf														8			1		9		1						1										duesseldorf
duval																																					duval
eimsbuettel		1		2		15	18				8	8	16	4	96	36	25	8	169	15	8				3		26			9	1	1			2	16	29	eimsbuettel
enteritidis		13		2			15	13				3	16	2	19	9	2		32	14	1	4				8	27		1				7		9	1	18	enteritidis
gallinarum												5	5					1	1	1							1						1			1	gallinarum
gaminara																1			1						1		1										gaminara
gatow																										1	1										gatow
give											2	5	7		2	2			4	2	2					1	5			4					4	8	give
habana																														1					1	4	6	habana
halmstad												1	1		4		5		9	4							4								2		2	halmstad
heidelberg		26		3		6	35				7	3	10	7	35	5	10	3	60	130	24	5				5	164		5		8		4		105	3	125	heidelberg
hvittingfoss																															5						5	hvittingfoss
illinois												1	1		4	1			5	3							3										illinois
indiana														10	10			1	21	5							5					1		3		4	indiana
infantis	6	16		3		2	27	9			12		21	3	44	45	14	11	117	56	2	34	1	1	4	9	107			5	2	2			17	2	28	infantis
java						3	3							3	2	5			10							2	2									1	1	java
javiana																1			1	1		1					2	1		1	1		2				5	javiana
johannesburg														6			3		9	5							5										johannesburg
kentucky											2	1	3		8	16		2	26	21		2			1		24			1	2					2	5	kentucky
lexington														1	3	5			9																1		1	lexington
litchfield																																			1		4	litchfield
livingstone						2	2			1		3	1	5	11	1		19	31							5	5		8		3				1		9	livingstone
madelia																														1	6						6	madelia
manhattan												1	1	1	5	3	1		10	2		1		1		1	5											manhattan
manila															2				2																1		1	manila
marina																																				4	4	marina
meleagridis															4	2			6	2		25					27			3					2	1	6	meleagridis
miami								10					10																							1	1	miami
minneapolis														31	1	1			33																			minneapolis
minnesota						4	4				1		1	3	12	3	4		22	1	4	2		1			8								2	1	3	minnesota
mississippi																																							mississippi
montevideo				4			4	4			15	26	45	12	25	56	6	2	101	49	10	11			12	4	86		12	5	1				22	6	46	montevideo
muenchen								9			7	1	17		3	2		1	6		3	3			13	11	30			2						2	muenchen
muenster															1				1																2	1	3	muenster
newington								2			3	9	14		2	19	93	1	115	1	1	5			2	2	11								2		2	newington
newport						1	1				2	3	5	5	5	9	1	2	22	10	1	5				4	20			7		2				1	10	newport
norwich																																				4	4	norwich
oranienburg		1					1	9			9	3	21	65	19	32	17	7	140	36	11	2			1	6	56			2					1	12	15	oranienburg
orion																6			6	14	1	1					16								1		1	orion
panama				5			5				1		1									1					1			1					1		2	panama
poona																1	1		2			1			7		8			1	1					5	7	poona
pullorum			4	3			7				1	4	5	5	2		4	2	13	1			1	1			3				2						2	pullorum
reading						1	1								7	5	8	2	22	10	8	4					22				2		2		1		5	reading
rhone																														5							5	rhone
rubislaw																										10	10											rubislaw
saint-paul				1			1	1			39		40	3	10	6	4	26	49	50	5	7				8	70				3			1	30	5	39	saint-paul
san-diego				2			2					1	1		1	2	1		4	8		1					9				1		2				3	san-diego
schwarzengrund												1	1	2	8	9	1	3	23	10	11	8					29			4					1		5	schwarzengrund
senftenberg				1		18	19				2	23	25	3	38	17	37	5	100	53	2	2	1				58			12					1	7	20	senftenberg
siegburg											3		3	8	5	18	1		32	6		1					7								1		1	siegburg
simsbury																						1				2	3											simsbury
tennessee				1		1	2	18			3	2	23	27	9	35	12		83	57		16			40	11	124		56	11	1		1		3		72	tennessee
thomasville															2	1			3	7	8				8		23		2								2	thomasville
thompson				2		2	4	4			14	5	23	3	9	4	7	1	24	6	1	7				2	16		6	2	5	1	1	36	6	57	thompson
typhi-murium	1	24	1	13		23	62	19			16	8	43	22	46	38	33	14	153	18	12	14		3	6	29	82		9	3	7		2	1	12	11	45	typhi-murium
typhi-murium v cop		8		2		32	42				12	2	14	1	11	1	14		27	35	1	5				12	53		5				3		35		43	typhi-murium v cop
typhi-suis																				4							5										typhi-suis
urbana				1		3	4					1	1			3	1		4	3							3					1				1	urbana
westhampton																2			2	2				1		15	18										westhampton
worthington		2					2	2			1	1	4	5	21	29	9	3	67	4	3	4				5	16			2	2				5	1	10	worthington
untypable group B														1		2			3		1	6			2		9				1				3	1	5	untypable group B
untypable group C-1																	1		1							2	2											untypable group C-1
untypable group D																																						untypable group D
untypable group E																2			2																			untypable group E
untypable group K														1	3		5		9		2					2												untypable group K
untypable group O															1				1	2		1				1												untypable group O
untypable/unknown						1	1	1			1		2			3			3	1						2	3											untypable/unknown
TOTAL	8	95	5	93	0	188	389	133	1	0	222	133	489	356	637	656	408	160	2,217	880	168	236	2	9	119	208	1,622	1	112	130	61	6	55	11	348	123	847	TOTAL

TABLE VI (Continued)
REPORTED NONHUMAN ISOLATES BY SEROTYPE AND STATE DURING 1967

SEROTYPE	REGION AND REPORTING CENTER																								1967 TOTAL	% of 1967 TOTAL	1966 TOTAL	% of 1966 TOTAL	1967 HUMAN TOTAL	% of 1967 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	34		2	37						2	1		3			11			11		123	1.4	30	0.4	13	0.1	alachua
albany	2	2		16	20	1			2	3																	30	0.3	2	0.0	5	0.0	albany
albuquerque																											7	0.1	0	-	0	-	albuquerque
amager						2			1	3																	8	0.1	4	0.1	2	0.0	amager
anatum	1		1		2	6	60		7	73						17	4		21	4		63		27	94		521	5.9	441	5.7	297	1.5	anatum
bareilly			1	1	2	2	4			6												1			1		51	0.6	30	0.4	81	0.4	bareilly
berta																11			11								13	0.1	7	0.1	37	0.2	berta
binza						1	17		1	19							3		3			1			1		142	1.6	85	1.1	14	0.1	binza
blockley				1	1	6				6							1		1	3	3	46		1	53		115	1.3	194	2.5	519	2.6	blockley
braenderup				1	1	5	8		1	14												9		6	15		84	1.0	38	0.5	83	0.4	braenderup
bredeney			2		2	4	25		1	30							2		2	1		22		10	33		174	2.0	86	1.1	120	0.6	bredeney
california		1			1																	4			4		22	0.3	33	0.4	16	0.1	california
cerro			1		1	1	2	1	1	5							1		1			7			7		120	1.4	66	0.9	9	0.0	cerro
chester		3			3																	6			6		52	0.6	153	2.0	100	0.5	chester
choleraesuis																						1			1		14	0.2	6	0.1	6	0.0	choleraesuis
choleraesuis v kun		4	1	1	6	1				1												4			4		78	0.9	94	1.2	20	0.1	choleraesuis v kun
cubana		1		3	4	1	2		4	7						1	1		2	1		18			19		243	2.8	219	2.8	66	0.3	cubana
decatur																											5	0.1	0	-	0	-	decatur
derby	1		1		2		261	1	1	263		2	1			6	8		17	8	1	26		14	49		458	5.2	266	3.5	326	1.7	derby
drypool		1			1		1			1																	25	0.3	15	0.2	1	0.0	drypool
dublin																	1		1			20			20		22	0.3	39	0.5	8	0.0	dublin
duesseldorf																											10	0.1	0	-	1	0.0	duesseldorf
duval			4		4																						4	0.0	0	-	0	-	duval
eimsbuettel	1		1	4	6	5	27	2	2	36						2			2	4		2			6		308	3.5	198	2.6	26	0.1	eimsbuettel
enteritidis						4			1	5				1					1			14			14		128	1.5	87	1.1	1,277	6.3	enteritidis
gallinarum						3			1	4																	12	0.1	23	0.3	1	0.0	gallinarum
gaminara							1		1	2												5			5		9	0.1	2	0.0	7	0.0	gaminara
gatow																				4					4		5	0.1	0	-	1	0.0	gatow
give							18			18						1	2		3	2		8			10		52	0.6	52	0.7	84	0.3	give
habana																2			2								8	0.1	2	0.0	12	0.1	habana
halmstad																											16	0.2	12	0.2	1	0.0	halmstad
heidelberg	1		5		6	11	27		3	43						7	33		40	4	37	140		1	182		665	7.6	786	10.2	1,648	8.4	heidelberg
hvittingfoss																											2	0.1	0	-	0	-	hvittingfoss
illinois																											9	0.1	7	0.1	1	0.0	illinois
indiana																											30	0.3	34	0.0	49	0.2	indiana
infantis	4	3	4		11	11	5		1	17						3	2		5	11	3	63		14	91		524	4.8	368	4.8	980	5.0	infantis
java							1			1												10		1	11		28	0.3	51	0.7	309	1.6	java
javiana				2	2		13		7	20												2			2		32	0.4	8	0.1	373	1.9	javiana
johannesburg																	1		1			2			2		17	0.2	4	0.1	15	0.1	johannesburg
kentucky						1	2		6	9						3			3			18		3	21		91	1.0	46	0.6	40	0.2	kentucky
lexington							2		1	3						1			1			3		3	6		20	0.2	13	0.2	3	0.0	lexington
litchfield																											4	0.0	19	0.2	81	0.4	litchfield
livingstone		1			1		1			1												16		1	17		71	0.8	86	1.1	55	0.3	livingstone
madelia																											6	0.1	2	0.0	8	0.0	madelia
manhattan							3			3										1		4		14	19		38	0.4	42	0.5	284	1.4	manhattan
manila									1	1																	4	0.0	12	0.2	0	-	manila
marina																											6	0.0	0	-	0	-	marina
meleagridis						1	3		1	5							2		2			6		1	7		52	0.6	25	0.3	2	0.0	meleagridis
miami																						2			2		13	0.1	4	0.1	69	0.3	miami
minneapolis																						1			1		35	0.4	3	0.0	0	-	minneapolis
minnesota				3	3		6			6						6	1		7								59	0.6	51	0.7	22	0.1	minnesota
mississippi							2			2												2			2		4	0.0	3	0.0	38	0.3	mississippi
montevideo	3		4	5	12		12	2	8	22						2	2		4			15			15		335	3.8	346	4.5	398	2.0	montevideo
muenchen							15		2	17				2			2		4			18		2	20		96	1.1	69	0.9	217	1.1	muenchen
muenster						2	4			6														1	1		8	0.1	27	0.3	23	0.1	muenster
newington																	4		4			4		3	7		153	1.7	82	1.1	43	0.2	newington
newport		1		1	2	1	27	1	17	46						7	1		8	5		25		10	40		154	1.8	159	2.1	1,263	6.4	newport
norwich						1			1	2																	6	0.1	7	0.1	13	0.1	norwich
oranienburg			1		1		2		1	3								1	1		1	21			22		260	3.0	183	2.4	406	2.1	oranienburg
orion				1	1												2		2								26	0.3	25	0.3	6	0.0	orion
panama						41				41														12	12		62	0.7	23	0.3	182	0.9	panama
poona									1	1																	18	0.2	20	0.3	58	0.3	poona
pullorum								6	2	8			4						4								42	0.5	57	0.7	3	0.0	pullorum
reading									3	3						1	3		4		4	39			43		100	1.1	53	0.7	54	0.2	reading
rhone																											5	0.1	0	-	0	-	rhone
rubislaw							3		2	5																	15	0.2	11	0.1	26	0.1	rubislaw
saint-paul				1	1	7	12		9	28		1				2	8		11	9	12	44		77	142		381	4.3	334	4.3	907	4.6	saint-paul
san-diego						2	1		2	5							3		3	1	14	49			64		91	1.0	110	1.4	159	0.8	san-diego
schwarzengrund						1	1		1	3						2	3		5	1	1	83		1	86		152	1.7	276	3.6	72	0.4	schwarzengrund
senftenberg				4	4	2	11	1	9	23												25			25		274	3.1	188	2.4	58	0.3	senftenberg
siegburg			1		1		1		2	3							4		4								51	0.6	37	0.5	10	0.1	siegburg
simsbury									2	2																	5	0.1	9	0.1	4	0.0	simsbury
tennessee						1	1	2		4							1		1			7		6	13		327	3.7	206	2.7	63	0.3	tennessee
thomasville						1	1			2																	30	0.3	24	0.4	3	0.0	thomasville
thompson			6		6	11	1		2	14	1				4	1	3		9	8	3	43		2	56		209	2.4	203	2.6	508	2.6	thompson
typhi-murium	1	6	2	2	11	12	77	7	18	114		2	2	3		39	2	2	50	41	6	259		30	336		898	10.2	884	11.5	5,530	28.0	typhi-murium
typhi-murium v cop		2	1	2	5	24				24				1		11		2	14	1	2	25			28		250	2.8	203	2.6	271	1.4	typhi-murium v cop
typhi-suis																						5			5		9	0.1	7	0.1	0	-	typhi-suis
urbana							2			2										3		2			5		20	0.2	18	0.2	18	0.1	urbana
westhampton							9			9																	24	0.3	1	0.0	0	-	westhampton
worthington							15		1	16						1	1		2	3		5		2	10		127	1.4	116	1.5	24	0.1	worthington
untypable group B						1			2	3											2	9			11		31	0.4	19	0.2	493	2.5	untypable group B
untypable group C-1				1	1	1	3	2		6					19				19		1				1		32	0.3	3	0.0	138	0.7	untypable group C-1
untypable group D						1				1					1				1		3				3		3	0.1	0	-	77	0.4	untypable group D
untypable group E							3			3											1				1		6	0.1	3	0.0	36	0.2	untypable group E
untypable group K				1	1																						12	0.1	11	0.1	1	0.0	untypable group K
untypable group O																											4	0.0	10	0.1	3	0.0	untypable group O
untypable/unknown				4	4				4	4							1		1			2			2		20	0.2	32	0.4	205	1.0	untypable/unknown
TOTAL	14	25	36	54	129	178	726	25	135	1,064	1	5	7	7	24	128	103	5	280	115	94	1,217	-0-	242	1,668	0	8,794*		7,709*		19,723*		TOTAL

*INCLUDES RARE SEROTYPES

VI-Virgin Islands

Table VII. – *Rare Salmonella serotypes isolated from nonhuman sources in the United States, 1967*

Serotype	State	Source	Total
S. abaetetuba	DC	Frog legs	1
S. adelaide	ILL	Monkey	1
S. arkansas	LA	Livestock feed	1
S. berlin	PA	Turtle water	1
S. bonariensis	KAN	Animal feed, protein supplement	1
S. bornum	IND	Bone meal and meat scraps	1
S. canoga	IND (1)	Bone meal and meat scraps	
	MIN (1)	Bone meal and meat scraps	
	VA (1)	Bone meal and meat scraps	3
S. carrau	CAL (1)	Egg yolk	
	LA (1)	Egg yolk bovine	2
S. champaign	MIC (2)	Animal feed	
	MIN (1)	Animal feed	3
S. colorado	HAW	Swine	1
S. corvallis	LA	Livestock feed	3
S. dessau	VA	Bonemeal and meat scraps	1
S. duisburg	OHI	Lizard	1
S. eastbourne	MIC (1)	Dog	
	MIN (1)	Lizard	2
S. georgia	ILL	Thyroid	1
S. grumpensis	LA (2)	Livestock feed	
	MIC (1)	Animal feed	3
S. hartford	HAW	Turtle water	1
S. hato	LA	Tankage	1
S. irumu	HAW (1)	Swine	
	HAW (1)	Avian	2
S. kottbus	CAL (2)	Chicken	
	GA (1)	Chicken	3
S. lindenburg	KAN	Cat	1
S. loma-linda	CAL	Guinea pig	1
S. london	GA (1)	Turkey	
	HAW (1)	Swine	2
S. manchester	NJ	Turtle	1
S. matopeni	DC	Frog legs	1
S. mgulani	DC	Candy	1
S. mission	OHI	Animal feed	1
S. mokola	LA	Swine	1
S. ness-ziona	NC	Egg	2

Table VII. – *(Continued)*

Serotype	State	Source	Total
S. new-brunswick	ILL (1)	Dry milk	
	KAN (1)	Egg yolk	2
S. new-haw	ILL (1)	Dry milk	
	IOW (1)	Animal feed	2
S. ohio	OHI (1)	Animal feed	
	OHI (1)	Egg	2
S. okatie	MIS	Animal feed	1
S. okerara	LA	Livestock feed	1
S. oslo	FLA	Monkey	2
S. paratyphi - B	MAS (1)	Turtle	
	TEN (1)	Turtle	
	WAS (1)	Turtle water	3
S. pomona	LA (1)	Moss	
	NJ (1)	Turtle water	2
S. putten	CAL	Ape	1
S. redlands	LA	Turtle	1
S. saphra	TEX	Lab rat	1
S. shubra	LA	Swine	1
S. sinstorf	HAW	Swine	1
S. stanley	LA	Monkey	1
S. sundsvall	ARI	Cattle	2
S. taksony	CAL (1)	Turkey	
	UTA (1)	Turkey	
	UTA (1)	Feather meal	3
S. tucson	CAL	Lizard	1
S. tuindorp	CAL (1)	Opossum	
	ILL (1)	Turtle water	2
S. typhi	CAL (1)	Lab stock culture	
	WAS (2)	Unknown	3
S. vejle	LA	Livestock feed	1
S. weltevreden	HAW (1)	Swine	
	HAW (1)	Mongoose	2
S. westerstede	GA	Chicken	1
S. wichita	UTA	Vitamins	1
S. zanzibar	DC (2)	Animal feed	
	NJ (1)	Animal feed	3
S. zeist	CON	Turtle water	1
S. untypable group C2	MO	Turkey	1
S. untypable group M	FLA (1)	Animal feed	
	MIS (1)	Animal feed	2
S. untypable group R	ILL	Glandular material	1
Total			89

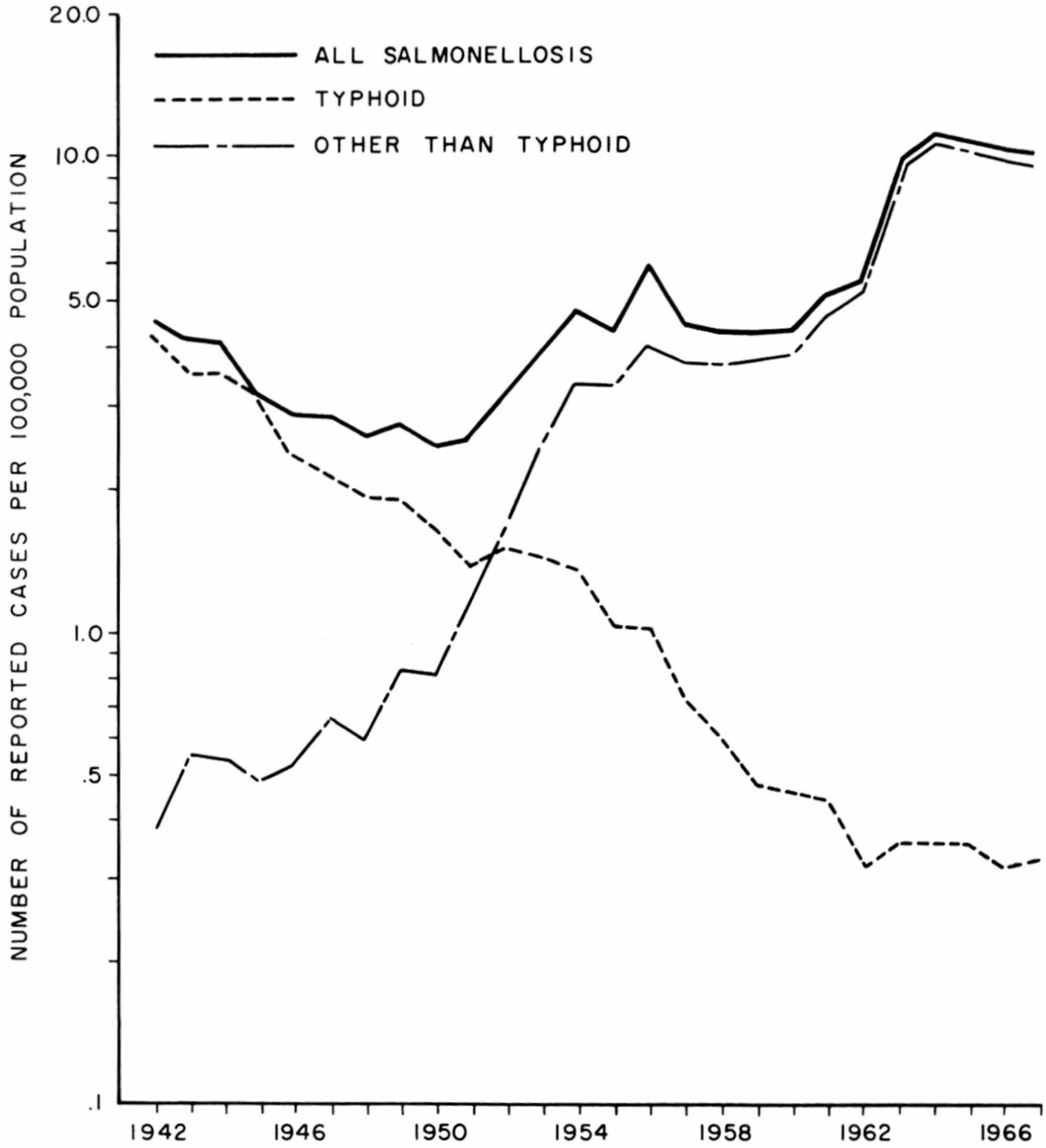
Table VIII. – *Five most common serotypes isolated from domestic fowl and farm animals in the United States, 1967*

Serotype	Chickens		Turkeys		Swine		Cattle		All Domestic Fowl and Farm Animals	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
S. anatum					75	7.8(4)	24	5.2(4)		
S. cholerae-suis v. kunzendorf					74	7.7(5)				
S. derby					258	26.8(1)	28	6.1(3)	318	7.7(3)
S. dublin							20	4.3(5)		
S. enteritidis	51	4.5(5)*								
S. heidelberg	221	19.4(1)	302	23.8(1)					592	14.3(2)
S. infantis	162	14.2(3)							227	5.5(5)
S. newport							29	6.3(2)		
S. reading			70	5.5(5)						
S. saint-paul			157	12.4(2)	91	9.5(3)			312	7.6(4)
S. schwarzengrund			74	5.8(4)						
S. thompson	97	8.5(4)								
S. typhi-murium and S. typhi-murium v. copenhagen	177	15.5(2)	114	9.0(3)	119	12.4(2)	269	58.2(1)	828	20.1(1)
Total	708	62.1	717	56.4	617	64.1	370	80.1	2,277	55.2
Total (all serotypes)	1,140		1,271		962		462		4,126	

*Rank shown in parentheses.

Figure 1

REPORTED INCIDENCE OF HUMAN SALMONELLOSIS UNITED STATES, 1942 - 1967



SOURCE: 1942 - 1962 MMWR, ANNUAL SUPPLEMENTS, 1951, 1954 AND 1964
1963 - 1967 SALMONELLA SURVEILLANCE REPORTS

Figure 2

REPORTED HUMAN ISOLATIONS OF SALMONELLA
UNITED STATES, 1963-1967

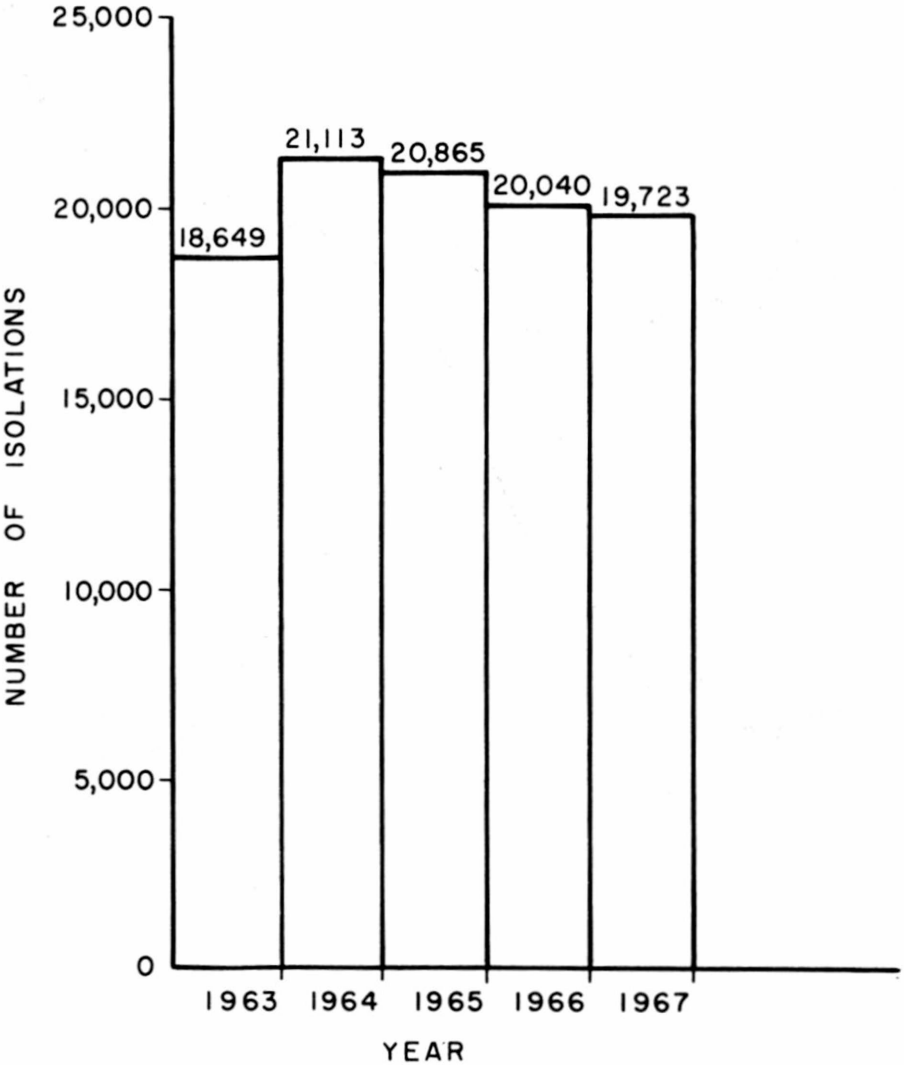
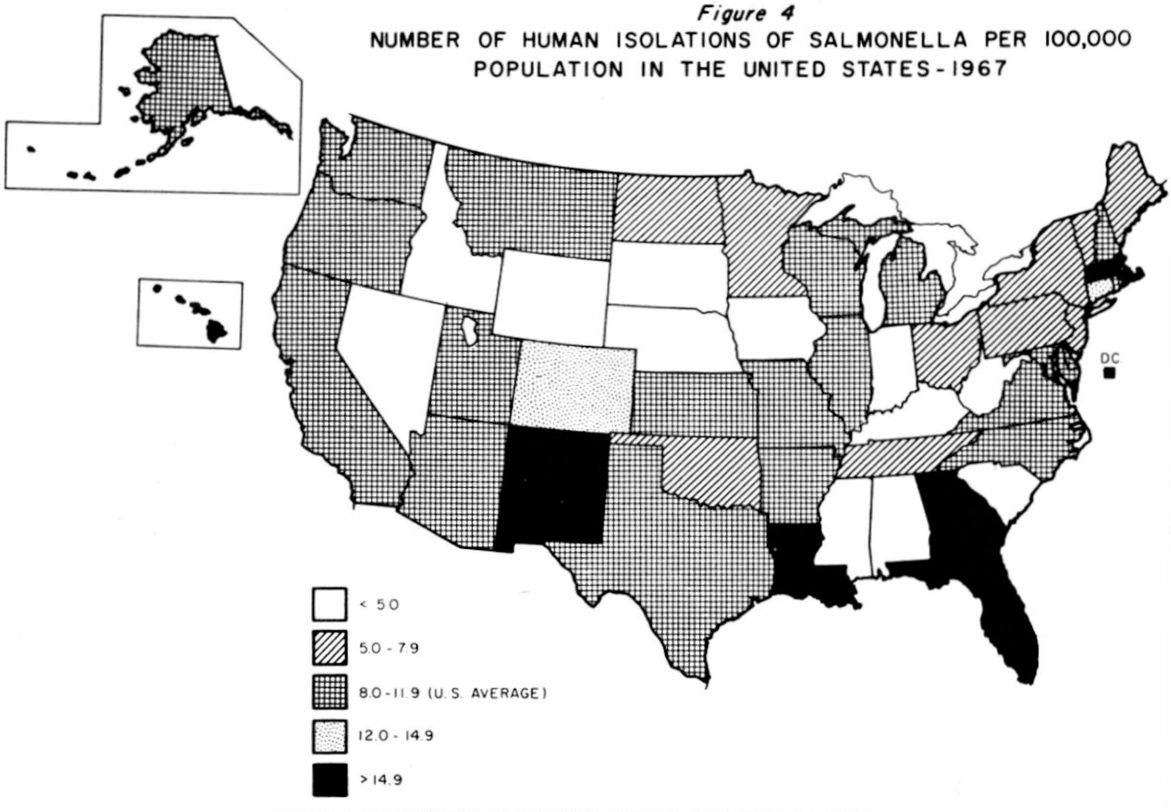


Figure 3

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 - 1967



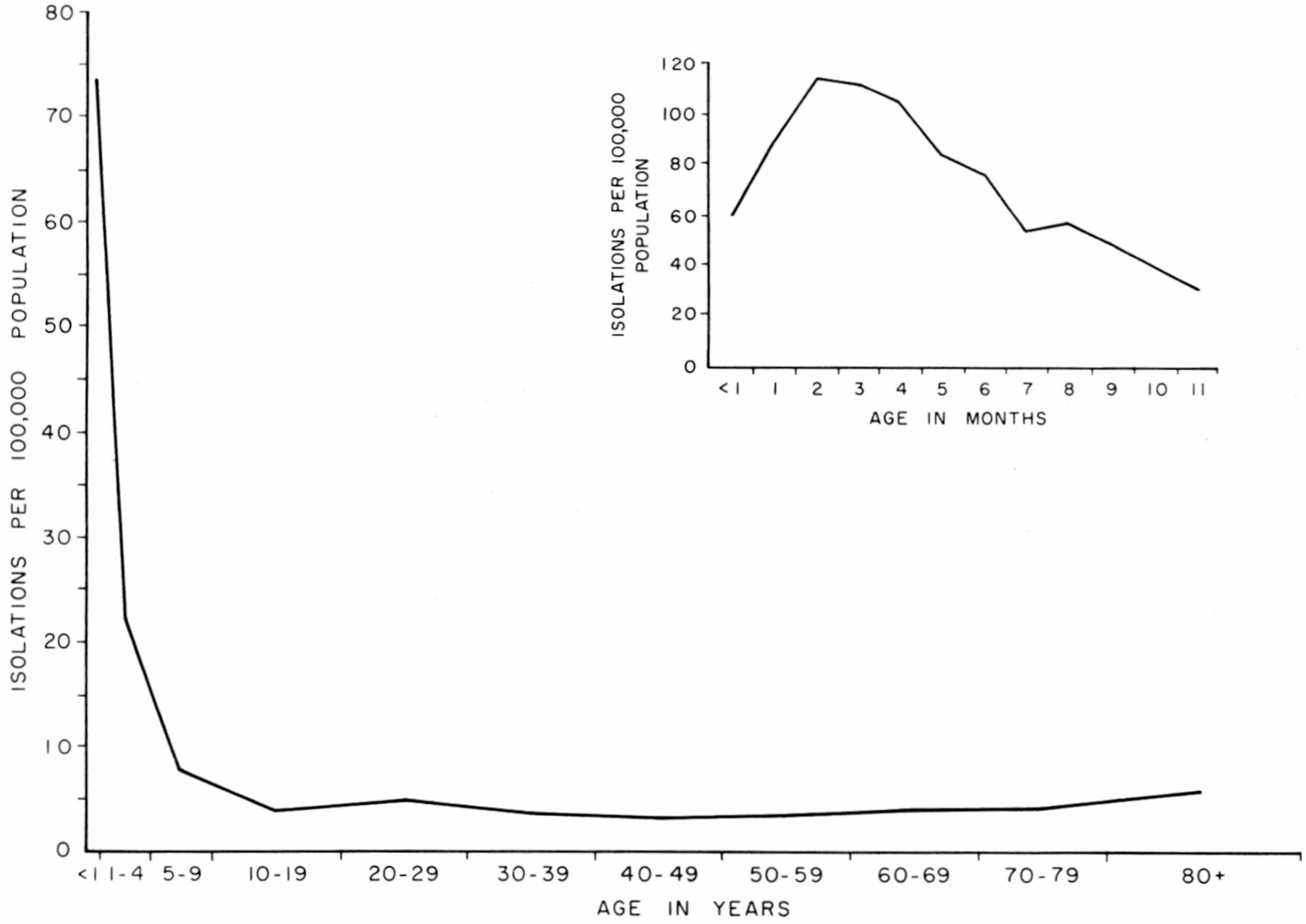
SOURCE: U.S. DEPARTMENT OF COMMERCE, CURRENT POPULATION REPORT'S SERIES P-25, NO. 380

State	Number of Isolations	Rate Per 100,000		State	Number of Isolations	Rate per 100,000	
Alabama	130	3.7	(+)	Montana	58	8.3	(−)
Alaska	22	8.1	(−)	Nebraska	24	1.7	(+)
Arizona	148	9.1	(−)	Nevada	19	4.3	(+)
Arkansas	221	11.2	(−)	New Hampshire	60	8.7	(−)
California	2,128	11.1	(+)	New Jersey	444	6.3	(−)
Colorado	267	13.5	(−)	New Mexico	324	32.3	(+)
Connecticut	354	12.1	(+)	New York	1,417	7.7	(−)
Delaware	55	10.5	(−)	North Carolina	488	9.7	(+)
Dist. of Col.	166	20.5	(−)	North Dakota	36	5.6	(+)
Florida	1,227	20.5	(+)	Ohio	601	5.7	(+)
Georgia	690	15.3	(+)	Oklahoma	179	7.2	(+)
Hawaii	635	85.9	(+)	Oregon	188	9.4	(−)
Idaho	29	4.1	(−)	Pennsylvania	907	7.8	(+)
Illinois	1,259	11.6	(+)	Rhode Island	72	8.0	(+)
Indiana	206	4.1	(−)	South Carolina	7	0.3	(−)
Iowa	113	4.1	(−)	South Dakota	20	3.0	(+)
Kansas	261	11.5	(−)	Tennessee	234	6.0	(−)
Kentucky	78	2.4	(−)	Texas	1,133	10.4	(+)
Louisiana	758	20.7	(−)	Utah	121	11.8	(−)
Maine	68	7.0	(−)	Vermont	23	5.5	(+)
Maryland	405	11.0	(−)	Virginia	391	8.6	(+)
Massachusetts	1,302	24.0	(−)	Washington	368	11.9	(−)
Michigan	699	8.1	(−)	West Virginia	44	2.4	(+)
Minnesota	263	7.3	(−)	Wisconsin	440	10.5	(−)
Mississippi	87	3.7	(+)	Wyoming	6	1.9	(+)
Missouri	548	11.9	(+)	TOTALS	19,723	10.0	(−2.0%)

(+) Increase over 1966 (−) Decrease from 1966

Figure 5

RATE OF HUMAN ISOLATIONS OF SALMONELLAE BY AGE GROUP* 1967



*POPULATION DATA DERIVED FROM CURRENT POPULATION REPORTS, SERIES P-25, NO. 385

Figure 6

TYPHOID FEVER-CASES AND CARRIERS UNITED STATES, 1967

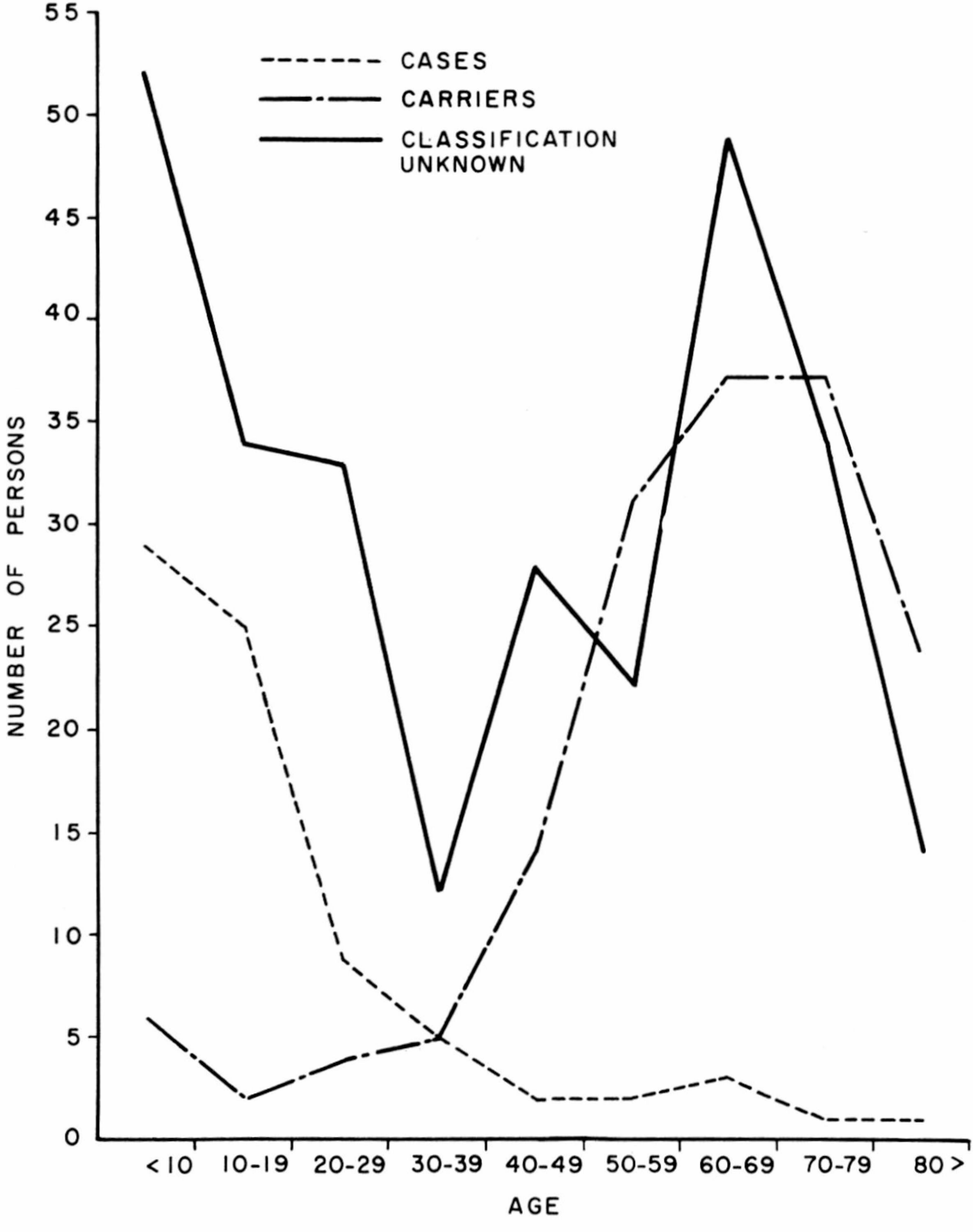


Figure 7

REPORTED NONHUMAN ISOLATIONS OF SALMONELLA
UNITED STATES, 1963-1967

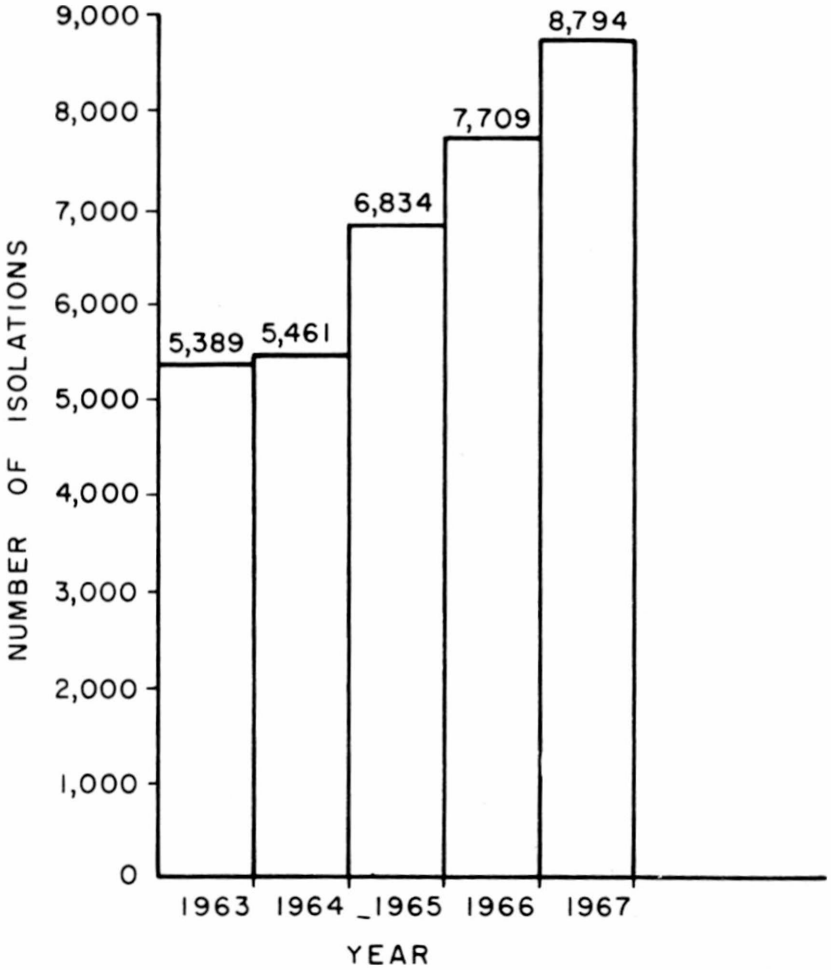
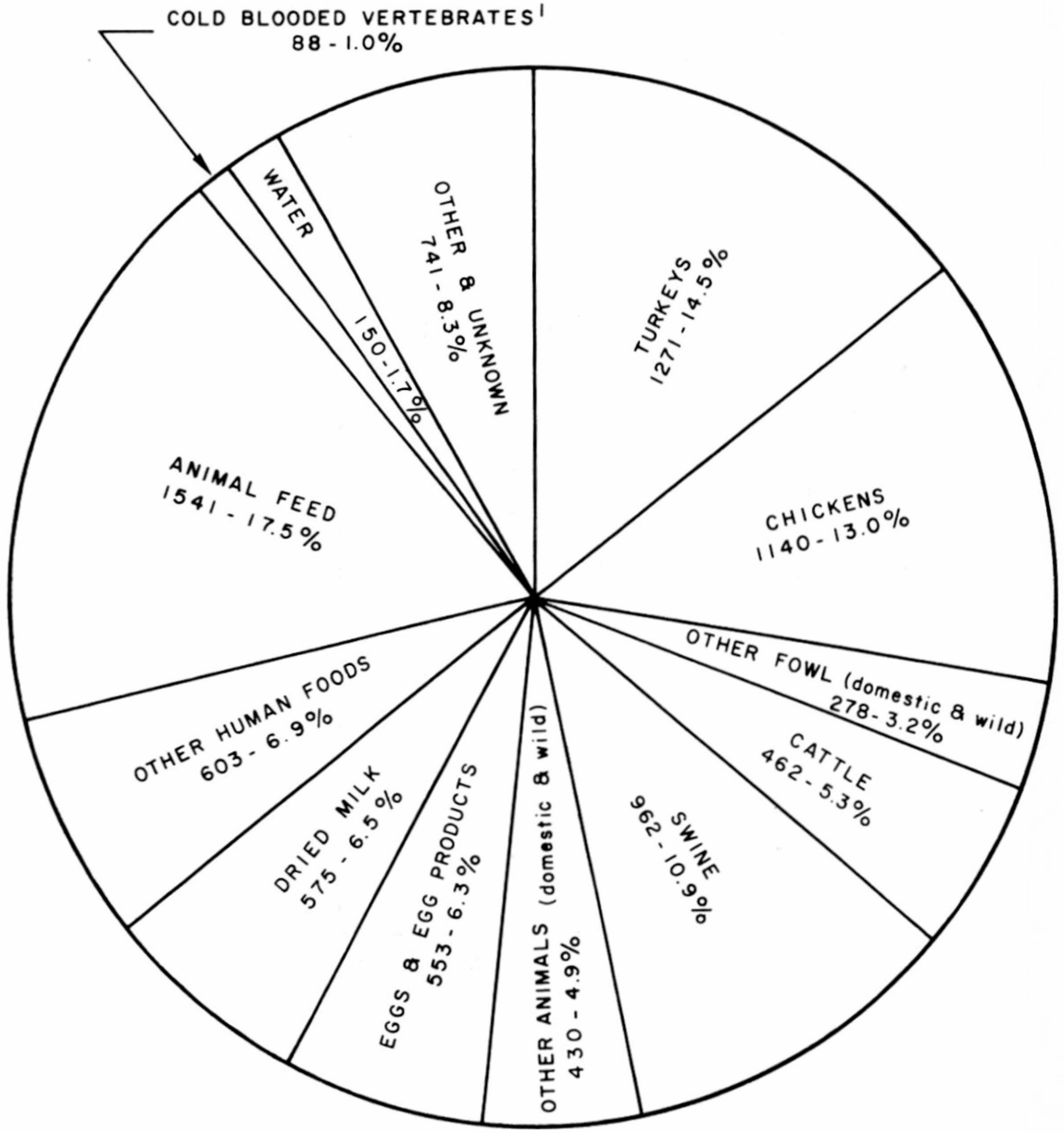


Figure 8

NUMBER AND PERCENT OF NONHUMAN SALMONELLA ISOLATIONS FROM THE INDICATED SOURCES IN THE UNITED STATES - 1967



[1]INCLUDES 57 TURTLE ISOLATES