

JUNE 8, 1971

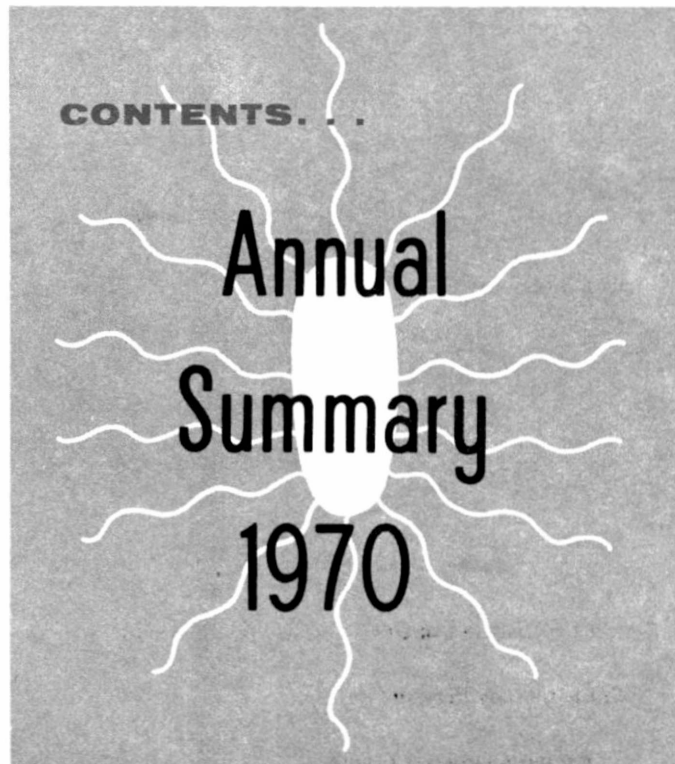
RECEIVED  
JUN 27 1971

CDC-LIBRARY  
ATLANTA, GA 30333

CENTER FOR DISEASE CONTROL

# SALMONELLA

**SURVEILLANCE**



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE  
Health Services and Mental Health Administration

# PREFACE

Summarized in this report is information received from State and City Health Departments, university and hospital laboratories, the National Animal Disease Laboratory (USDA, ARS), Ames, Iowa, and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Surveillance Report are most welcome. Please address:

Center for Disease Control  
Attn: Salmonellosis Surveillance Activity, Epidemiology Program  
Atlanta, Georgia 30333

Center for Disease Control . . . . . David J. Sencer, M.D., Director  
Epidemiology Program . . . . . Philip S. Brachman, M.D., Director  
Bacterial Diseases Branch . . . . . John V. Bennett, M.D., Chief  
Eugene J. Gangarosa, M.D., Deputy Chief  
Enteric Diseases Section . . . . . Matthew S. Loewenstein, M.D., Chief  
Salmonellosis Surveillance Activity . . . . . Marshall D. Fox, D.V.M.  
Andrew Taylor, Jr., M.D.  
Statistician . . . . . Stanley M. Martin, M.S.  
Office of Veterinary Public Health Services . . . . . James H. Steele, D.V.M., Chief

June 9, 1971

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. MATERIALS AND METHODS	1
III. SUMMARY	1
IV. REPORTS FROM THE STATES	1
A. Human	1
B. Nonhuman	6
V. SPECIAL REPORTS	
Summary of Salmonella Isolations from Humans, 1964-1970	8

## I. INTRODUCTION

This report summarizes the results of the eighth year (January 13, 1970-January 11, 1971) of the Salmonella Surveillance Program established jointly by the Center for Disease Control (formerly National Communicable Disease Center) 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 the 50 states, New York City, the District of Columbia, the Salmonella Reference Center-Beth Israel Hospital (New York City), the U.S. Department of Agriculture, National Animal Disease Laboratory (USDA), and the U.S. Food and Drug Administration.

## II. MATERIALS AND METHODS

The data analyzed are collected by the Salmonellosis Surveillance Activity 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." In addition, such factors as the seriousness of the disease and a lack of adequate laboratory facilities in some areas are 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

In 1970, 24,216 isolations of salmonellae from humans were reported, representing a 13.1 percent increase from the 21,413 reported for 1969 and a 22.7 percent increase from the 19,740 reported in 1968. Salmonella typhi-murium and S. typhi-murium var. copenhagen, as in previous years, were the most common serotypes, accounting for 24.4 percent of all isolations.

A total of 11,653 recoveries of salmonellae from nonhuman sources were reported during 1970, an increase of 23.3 percent over 1969 and 31.3 percent over 1968.

## IV. REPORTS FROM THE STATES

### A. HUMAN

#### Incidence

Since the first full year of operation of the present salmonella surveillance system (1963), the incidence of reported isolations of salmonellae has remained relatively constant. A slight upward trend has been evident during the past 2 years (Figure 1).

The seasonal distribution of salmonella isolations from humans from 1965 through 1970 shows a consistent seasonal pattern, with the greatest number of isolations being reported from July through October for each year and the lowest number from January through April (Figure 2).

## Serotype Frequency

A total of 171 different salmonella serotypes were reported in 1970, compared with 165 in 1969 (Tables I and II). This number (171) represents approximately 12 percent of the more than 1,400 known salmonella serotypes.

The 10 most frequently reported serotypes appear in the table below. These 10 serotypes accounted for 16,832 (69.5 percent) of the 24,216 isolations reported in 1970. The frequency of isolation of S. derby showed the greatest increase with a rise of 46 percent over 1969. Salmonella derby was the only new serotype to appear on the list. This table also demonstrates the close correlation between human and nonhuman sources of salmonellae, with six serotypes appearing on both lists. The similarities demonstrate the importance of the nonhuman reservoirs of salmonellae in the epidemiology of human salmonellosis.

The Ten Most Frequently Isolated Serotypes From Human and Nonhuman Sources - 1970

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank Last Year	Serotype	Number	Percent
1 <u>typhi-murium</u> *	5,917	24.4	1	<u>typhi-murium</u> *	1,893	16.2
2 <u>enteritidis</u>	2,504	10.3	2	<u>anatum</u>	919	7.9
3 <u>newport</u>	1,700	7.0	3	<u>derby</u>	884	7.6
4 <u>heidelberg</u>	1,699	7.0	4	<u>heidelberg</u>	871	7.5
5 <u>infantis</u>	1,214	5.0	5	<u>saint-paul</u>	532	4.6
6 <u>saint-paul</u>	1,157	4.8	7	<u>infantis</u>	434	3.7
7 <u>thompson</u>	958	4.0	6	<u>montevideo</u>	337	2.9
8 <u>blockley</u>	660	2.7	9	<u>worthington</u>	323	2.8
9 <u>typhi</u>	533	2.2	8	<u>senftenberg</u>	320	2.7
10 <u>derby</u>	490	2.0	>10	<u>thompson</u>	319	2.7
Total	16,832	69.5		Total	6,832	58.6
Total (all serotypes)	24,216			Total (all serotypes)	11,653	
*Includes <u>var.</u> <u>copenhagen</u>	277	1.1		*Includes <u>var.</u> <u>copenhagen</u>	242	2.1

## Geographic Patterns

The geographic distribution of salmonella isolations in 1970 showed California reporting the largest number, 2,631. Other states reporting over 1,000 isolations were New York, Pennsylvania, Illinois, Texas, Florida, Massachusetts, and Michigan (Figure 3).

The incidence of salmonella infection for the entire country was 12.0 per 100,000 population. As in past years, Hawaii reported the highest incidence, with 94.6 isolations per 100,000. Other areas reporting incidence rates higher than 20 per 100,000 were New Mexico, Maryland, Georgia, Massachusetts, and Alaska.

Geographic variations among specific serotypes are seen in Tables I and II. Several serotypes continued to exhibit definite regional patterns which have been remarkably consistent in recent years. For example, Hawaii, which accounted for only 3.1 percent of the national salmonella isolations, reported 89 percent (93 of 104) of all Salmonella weltevreden isolations. Four southern states, Florida, Texas, Louisiana, and Georgia, accounted for 74 percent of the 420 total S. javiana isolations. Missouri reported all 10 S. irumu isolations, and California reported all eight S. dublin isolations. Texas reported 14 of the 15 S. saphra isolations. Appropriately, 50 (70 percent) of 71 S. miami isolations and all eight S. tallahassee isolations were reported from Florida, and 15 of 17 S. atlanta isolations were made in Georgia.

### Outbreaks

In 1970, 49 outbreaks involving 3,852 individuals were reported in the Salmonella Surveillance Reports (see table on pages 4-5). Of 31 foodborne outbreaks, 25 were traced to specific contaminated foods, including six caused by turkey, four by pork products, three by ice cream, three by chicken, two by potato salad, one by pork and turkey, one by beef and ham, and one each by beef, Cornish hen, lemon tarts, bread pudding, and spaghetti with sauce. Multiple foods were found to be contaminated in three outbreaks. The specific food vehicle could not be identified in the three remaining foodborne outbreaks; however, either chicken or beef was believed to be the vehicle in one of these outbreaks.

Contaminated water was incriminated as the vehicle of infection in an outbreak of S. typhi which involved four persons. Another S. typhi outbreak (two cases) was traced to a bacteriology laboratory accident.

Person-to-person contact was the primary mode of spread in eight outbreaks involving 208 individuals. The mode of transmission in three outbreaks was not determined.

Five outbreaks involving seven individuals were traced to household pets infected with the same serotypes, including a pet dog (one outbreak), pet parakeet (one outbreak), pet goslings (one outbreak), and pet turtles (two outbreaks).

Although the etiology of all outbreaks was confirmed bacteriologically, many of the 3,852 ill individuals were never cultured and are not included as reported isolations in the national surveillance data. Thus only a very small fraction of the total of 24,216 isolations of salmonellae in 1970 were from reported outbreaks. This suggests that many outbreaks are never investigated.

### Age and Sex Distribution

Of the 17,912 individuals reported by age in 1970, 12,073 (67.4 percent) were less than 20 years of age. This is almost the same proportion as in 1969. The number of isolations per 100,000 population in various age groups in 1970 closely approximates those for the years 1963 through 1969. However, the rates in the age group less than 10 appear to be increasing over the past 7 years. This is particularly true in the less-than-1-year age groups where the rates per 100,000 have been 43, 53, 63, 69, 74, 84, 97, and 121, respectively, for the years 1963 through 1970 (Figure 4 and Table IV).

## Salmonella Outbreaks Reported in the Salmonella Surveillance Reports- 1970

Vehicle of Infection	Number of Persons Ill	Location	State	Serotype
Turkey	12	Mental hospital	New Mexico	<u>S. newport</u>
	145	Banquet	Pennsylvania	<u>S. heidelberg</u>
	141	Summer camp	New Jersey	<u>S. thompson</u>
	81	Restaurant	Wisconsin	<u>S. saint-paul</u>
Turkey*	2	Home	Montana	<u>S. heidelberg</u> and <u>S. typhi-murium</u> var. <u>copenhagen</u>
	139	Naval air station	Florida	<u>S. enteritidis</u>
Chicken	46	Hospital	Hawaii	<u>S. infantis</u>
	54	Nursing home	Pennsylvania	<u>S. enteritidis</u>
Chicken*	200	Church supper	Louisiana	<u>S. thompson</u>
Cornish hen	240	Anniversary dinner	New York	<u>S. enteritidis</u>
Chicken or beef	10	Delicatessen	Hawaii	<u>S. weltevreden</u>
Beef jerky	20	Community	California	<u>S. infantis</u>
Beef and ham	252	Restaurant	Nebraska	<u>S. enteritidis</u>
Barbecued pork	300	Restaurant	Tennessee	<u>S. thompson</u>
Smoked ham	123	School	Florida	Unknown
Ham and barbecue	56	Restaurant	North Carolina	<u>S. typhi-murium</u>
Barbecued pork and turkey	300	Restaurant	Tennessee	<u>S. typhi-murium</u>
Pork salami	1	Home	Washington	<u>S. newport</u>
Potato salad	336	Picnic	South Carolina	<u>S. enteritidis</u>
	27	Restaurant	Hawaii	<u>S. typhi-murium</u>
Ice cream	200	School for retarded	North Dakota	<u>S. thompson</u>
Ice cream**	12	Picnic	Georgia	<u>S. enteritidis</u>
	11	Home	Missouri	<u>S. typhi-murium</u>
Lemon tart**	5	Private party	Tennessee	<u>S. infantis</u>
Bread pudding*	123	Nursing home	Maryland	<u>S. enteritidis</u>
Spaghetti and sauce	5	Restaurant	Washington	<u>S. thompson</u>
Multiple foods	130	Private party	Nebraska	<u>S. minnesota</u>
	250	Catered parties	Pennsylvania	<u>S. enteritidis</u>
	353	Prison cafeteria	Michigan	<u>S. enteritidis</u>
Undetermined food	10	Home	Louisiana	<u>S. weltevreden</u>
	5	Restaurant	Oregon	<u>S. san-diego</u>

## Salmonella Outbreaks Reported in the Salmonella Surveillance Reports - 1970 (continued)

Vehicle of Infection	Number of Persons Ill	Location	State	Serotype
Water*	4	Home	New Mexico	<u>S. typhi</u>
Person-to-person	0	Infant's home	Maryland	<u>S. blockley</u>
	(24 asymptomatic)			
	44	Indian reservation	South Dakota	<u>S. typhi-murium</u>
	10	Hospital and community	New Jersey	<u>S. typhi-murium</u>
	20	Nursery	Vermont	<u>S. blockley</u>
	45	Hospital and community	Texas	<u>S. typhi-murium</u>
Person-to-person*	19	Convalescent home	Oregon	<u>S. typhi-murium</u>
	65	Nursing home	Michigan	<u>S. typhi-murium</u>
	5	Hospital	Pennsylvania	<u>S. enteritidis</u>
Laboratory cultures	2	Bacteriology laboratory	Maryland	<u>S. typhi</u>
Undetermined	8	Home	Virginia	<u>S. indiana</u>
	8	Newborne nursery	Virginia	<u>S. thompson</u>
	26	Nursing home	Kansas	<u>S. heidelberg</u>
Pet dog	1	Home	Washington	<u>S. thompson</u>
Pet goslings	1	Home	Washington	<u>S. typhi-murium</u>
Pet parakeet	2	Home	Washington	<u>S. typhi-murium</u>
Pet turtle	1	Home	Wisconsin	<u>S. thompson</u>
	2	Home	Ohio	<u>S. enteritidis</u>
Total: Outbreaks	49			
Cases	3,852			

\* Probable vehicle of infection

\*\* Food contained raw eggs

Of the 23,982 individuals for whom sex was reported during 1970, 12,264 (51.1 percent) were males, and 11,718 (48.9 percent) were females (Table IV). Although there was no significant overall sex predilection, it is interesting to note that for the age groups under 20 years there was a preponderance of males and the opposite was true for age groups over 20 years. The same distribution has been seen for the past 7 years and has been noted with certain other bacterial enteric diseases. It is thought to be related to an inherent increased susceptibility of males, especially in infancy, and a higher degree of exposure of adult females because of their more intimate contact with sick children. The following table presents this age-sex distribution of the 17,890 individuals for whom both age and sex were reported in 1970.



Age (Years)	Male		Female		Total
	Number	Percent	Number	Percent	
Less than 20	6,648	55.1	5,410	44.9	12,058
20 and Over	2,464	42.2	3,368	57.8	5,832
Total	9,112	50.9	8,778	49.1	17,890

(Unknown and unspecified ages not included)

### 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 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 49 outbreaks reported in the Salmonella Surveillance Reports in 1970, 45\* deaths occurred among 3,852 cases, representing a death to case ratio of 1.17 percent. In the years 1962-1969, 53 deaths were reported among 20,161 persons involved in 238 outbreaks, giving a case fatality ratio of 0.26 percent.

### Uncommon and Rare Serotypes

One hundred thirty one serotypes are classified as uncommon or rare (Table II). Eighty-six serotypes, representing 50 percent of the 171 reported serotypes had five or less isolations each, accounting for only 175 (0.7 percent) of the 24,216 isolations reported during 1970.

### Typhoid Fever - Cases and Carriers

Of 533 isolations of *S. typhi* reported in 1970, 108 were from cases of typhoid fever and 147 from asymptomatic carriers; for the remaining 278, the clinical classification was not reported. The sex distribution of typhoid cases showed no significant sex predilection (F:M = 1.2:1); however, for carriers, females predominated (F:M = 3.4:1). Most cases occurred in the younger age groups, with 77.4 percent of cases occurring in persons less than 30 years of age. In contrast, most carriers were in the older age groups, with 89.1 percent 50 years of age or older.

### B. NONHUMAN

In 1970, 11,653 salmonella isolations from nonhuman sources were reported (Table V, VI, VII, and VIII). This represents a 23.3 percent increase over the 9,453 isolations reported in 1969. 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 5 and Tables VI, VII, and VIII. The number and percent of isolations by source demonstrate the importance of poultry and poultry products as vehicles of salmonellosis. Turkey, chicken, and eggs and egg products, which together were responsible for 39 percent of the foodborne outbreaks reported in 1970, accounted for 34.6 percent of all nonhuman isolations. Swine and cattle accounted for 13.9 percent of all nonhuman recoveries, and dried milk and other human food for 24.3 percent.

\*Twenty-nine of the 45 deaths reported in 1970 occurred in a single outbreak involving aged nursing home patients.

Isolations from animal feedstuffs accounted for 17.4 percent of nonhuman isolations during 1970. This reflects continued interest in the surveillance of animal feeds.

The 10 most common salmonella serotypes isolated from nonhuman sources during 1970 are listed in the table on page 2. These 10 serotypes accounted for 58.6 percent of all nonhuman isolates.

#### Sources (Table VI)

##### Domestic Fowl and Their Products

In 1970, there were 3,701 isolations (31.8 percent of nonhuman isolations) from domestic fowl and 334 isolations (2.9 percent) from eggs and egg products.

Salmonella typhi-murium including var. copenhagen was the most common serotype isolated from chickens, with 233 isolations (14.3 percent of the isolations from that source), and was followed by S. thompson with 160 (9.8 percent), S. infantis with 142 (8.7 percent), and S. heidelberg and S. worthington with 133 each (8.1 percent).

The five most common serotypes isolated from turkeys were S. heidelberg with 502 isolations (24.3 percent), S. saint-paul with 315 (15.2 percent), S. typhi-murium including var. copenhagen with 231 (11.2 percent), S. san-diego with 172 (8.3 percent), and S. senftenberg with 113 (5.5 percent).

The five most common serotypes isolated from eggs and egg products were S. thompson with 58 isolations (17.4 percent) S. infantis and S. montevideo with 27 isolations each (8.1 percent), and S. cerro and S. indiana with 23 isolations each (6.9 percent).

##### Domestic Animals

In 1970, the most common serotypes isolated from swine were S. cholerae-suis var. kunzendorf with 289 isolations (38.6 percent), S. typhi-murium including var. copenhagen with 104 (13.9 percent), S. panama with 60 (8.0 percent), S. derby with 43 (5.7 percent), and S. anatum and S. heidelberg with 26 each (3.5 percent).

The five most common serotypes isolated from cattle in 1970 were S. typhi-murium var. copenhagen with 557 isolations (64.0 percent), S. dublin with 88 (10.1 percent), S. newport with 73 (8.4 percent), S. heidelberg with 35 (4.0 percent), and S. anatum with 25 (2.9 percent). S. dublin, a host adapted serotype in cattle, accounted for 21.4 percent of bovine isolations in 1969 and for 14.5 percent of the isolations in 1968.

##### Reptiles and Their Environment

In 1970, there were 254 salmonella isolations (2.2 percent of nonhuman isolations) from reptiles and their environment. Turtles and turtle water, which accounted for 223 (87.8 percent) of the reptile recoveries, constituted a significant source of infection to children keeping these animals as pets. The most common serotypes isolated from turtles were S. newport with 30 isolations (13.5 percent), S. java with 27 isolations (12.1 percent), S. urbana with 21 isolations (9.4 percent), S. saint-paul with 15 isolations (6.7 percent), and S. braenderup, S. litchfield, and S. poona, with 11 isolations each (4.9 percent).

##### Animal Feed and Feed Ingredients

In 1970, there were 2,026 salmonella isolations (17.4 percent of nonhuman isolations) reported from animal feed and feed ingredients as compared with 1,953 isolations (20.7 percent) during 1969. Of the 2,026 salmonella isolations, only five were obtained from vegetable protein supplements. The most common serotypes isolated

from animal feeds were S. anatum with 198 isolations (9.8 percent), S. tennessee with 174 (8.6 percent), S. eimsbuettel with 151 (7.5 percent), S. senftenberg with 121 (6.0 percent), and S. montevideo with 109 (5.4 percent).

#### V. SPECIAL REPORTS

##### Summary of Salmonella Isolations from Humans, 1964-1970

During the 7-year period 1964-1970, 297 different salmonella serotypes have been recovered from humans. A list of the reported serotypes with the numbers of isolation per year is presented in Table IX.

Several interesting patterns are apparent. S. enteritidis isolations steadily increased in frequency from 801 in 1964 to 2,504 in 1970. The number of S. newport isolations increased from 1,036 to 1,700 in the same time period. Likewise, the frequency of S. saint-paul isolations increased from 645 in 1964 to 1,157 in 1970. On the other hand, the frequency of S. derby isolations, despite the increase to 490 in 1970, has remained at relatively low levels since reaching a peak of 2,360 in 1964.

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES DURING 1970

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																															
	NEW ENGLAND					MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL					SOUTH ATLANTIC											
	ME	NH	VT	MAS	RI	CON	NYA	NYB	NYC	NJ	PA	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
<i>anatum</i>				16				6	6	8	21	4	2	25	3	4	2	2	5		1				5		2		3		9	30
<i>bareilly</i>				2				4	4	3	2	2		16	6		1	1						1				5			5	
<i>blockley</i>	7		5	55	6	16		18	43	13	49	11	2	48	32	18	7	5	12			4	6	48	1	20		15	34	13		
<i>braenderup</i>				14		2	1	2	5	6	4	1		4	3	5	3						3	1		3			1	6		
<i>bredeney</i>	1			5			1	4	10	8	10	3		24	6	7	2	3	3			1	1	17				2	9	10		
<i>chester</i>	1			10		1		1	1	9				10	1	7	4	1	1		1			5		2		3	1	2		
<i>cholerae-suis k</i>						1				2	1	1	1	9	1													1	4			
<i>cubana</i>			1	15		3				5	6	5	2	20	9	1			1	1			1	17	1	6	1	5	11	17		
<i>derby</i>				14		1		10	27	15	21	13	1	70	16	8	4			3	2	1	8		42	3	7	9	23	9		
<i>enteritidis</i>	5		10	155	16	46	1	73	186	83	257	97	54	170	209	76	41	134	28	2	4	13	13	6	153	9	78	5	45	8	88	51
<i>give</i>				2					4	3	1			4	2	3									1				4	2		
<i>heidelberg</i>	3			74	2	25	1	48	90	54	215	44	21	164	60	37	34	3	23	1	2		29	5	39	6	24		34	82	64	
<i>indiana</i>			1	3			2	10	3	8	9	3	10	3									1	13	2	2		3	13	8		
<i>infantis</i>	12		1	40	8	28	2	10	33	34	93	43	24	53	71	40	16	6	10	4	3	2	32	4	18	3	36	2	23	46	52	
<i>java</i>	6	1		2	3	19	3	16	31	20	55			20	3	21	18	2	3	1			7	10	6	1		12	1	7	30	
<i>javiana</i>				7					1	2	1	1	1	4		3		1		1			4					9	40	129		
<i>litchfield</i>				4		6		1	13	4	14	3	3	7	5	3	2	4	5		1			10		1		1	17	26		
<i>livingstone</i>				1				2				6			5	1	1															
<i>manhattan</i>				4	1	5		11	18	9	35	20	4	37	24	10	6	3	1	1				21		2	1	12	12	15		
<i>miami</i>				3					2	1				1	1		1							3		1			5	50		
<i>mississippi</i>														1	3																	
<i>montevideo</i>	2		1	20		9	2	10	20	13	46	26	4	17	3	12	2	1	2				13	1	17	2	8	2	25	20		
<i>muenchen</i>			1	10		6		7	12	10	11	6		16	14	7	2	1	4	1	2	1	11		2	3	2	28	48			
<i>newington</i>			1	3		1		3	3	4	4	1		3		2	1		2						3	1			1	6		
<i>newport</i>				32		15		18	44	31	45	38	30	67	57	41	23	5	12	5	5		48	3	22	3	9	1	38	1	71	141
<i>oranienburg</i>				13	1	11	1	14	13	25	24	20	2	10	4	14	10	4	1	1	1		4		6		5		16	17	45	
<i>panama</i>				13		3	5	5	3	3	13			4	7	3	4	2						3				4	3			
<i>paratyphi B</i>				25		4		3	4	1	1	34	3	7	27	1	2	2						18	2	18		2	1	1		
<i>reading</i>	3			14				1		2		1	4		32		1											10	2	9		
<i>saint-paul</i>	1		7	30	1	18		43	52	61	122	40	12	106	53	95	15	3	7	3			6	6	57	1	13	1	47	35	74	
<i>san-diego</i>	1		2	2		3		1	6	1	12		1	7	11	2	1						2		4	1	1		2	6	2	
<i>schwarzengrund</i>				2				7	8			3		3	4	1	5	1				1		1		1		5	2			
<i>senftenberg</i>			2	1	1			6	3	6	4	1	1	5	2	1	1			3				1	5			1	1	8		
<i>tennessee</i>			1	1				2	3	4	1		2	7			2		1				2			4		2	1	3	3	
<i>thompson</i>	1		2	41	3	13	1	16	37	66	40	40	1	70	60	42	19	3	4	26	1	1	10	1	22	1	16	9	28	43	34	
<i>typhi</i>	2			11	1	15	16	11	22	8	16	27	7	21	14	5	3		10	1			4		19	1	9	6	21	1	19	36
<i>typhimurium</i>	25	2	10	369	25	142	5	107	221	136	332	139	109	372	192	217	102	36	85	20	52	1	104	16	177	14	139	3	190	1	230	162
<i>typhimurium co</i>	5		1	61		62				19				6	46			4		3		1	3								1	
<i>weltevreden</i>																	1												1			
<i>worthington</i>				3		1		1	2		3	2	4	3											1	3		1	3	1		
<b>TOTAL</b>	<b>75</b>	<b>3</b>	<b>42</b>	<b>1076</b>	<b>68</b>	<b>461</b>	<b>39</b>	<b>462</b>	<b>935</b>	<b>660</b>	<b>1481</b>	<b>641</b>	<b>295</b>	<b>1425</b>	<b>954</b>	<b>722</b>	<b>335</b>	<b>227</b>	<b>224</b>	<b>76</b>	<b>74</b>	<b>20</b>	<b>305</b>	<b>65</b>	<b>757</b>	<b>51</b>	<b>416</b>	<b>29</b>	<b>558</b>	<b>14</b>	<b>910</b>	<b>1114</b>
<b>ALL OTHER*</b>	<b>1</b>	<b>85</b>	<b>2</b>	<b>72</b>	<b>36</b>	<b>14</b>	<b>298</b>	<b>39</b>	<b>89</b>	<b>27</b>	<b>60</b>	<b>24</b>	<b>7</b>	<b>62</b>	<b>51</b>	<b>23</b>	<b>6</b>	<b>10</b>	<b>19</b>	<b>2</b>	<b>2</b>	<b>19</b>	<b>13</b>	<b>6</b>	<b>50</b>	<b>107</b>	<b>28</b>	<b>2</b>	<b>38</b>	<b>36</b>	<b>79</b>	<b>119</b>
<b>TOTAL</b>	<b>76</b>	<b>88</b>	<b>44</b>	<b>1148</b>	<b>104</b>	<b>475</b>	<b>337</b>	<b>501</b>	<b>1024</b>	<b>687</b>	<b>1541</b>	<b>665</b>	<b>302</b>	<b>1487</b>	<b>1005</b>	<b>745</b>	<b>341</b>	<b>237</b>	<b>243</b>	<b>78</b>	<b>76</b>	<b>39</b>	<b>318</b>	<b>71</b>	<b>807</b>	<b>158</b>	<b>444</b>	<b>31</b>	<b>596</b>	<b>50</b>	<b>989</b>	<b>1233</b>

Note: NYA—New York, Albany; NYB—Beth Israel Hospital; NYC—New York City.

\* See Table II.

TABLE I - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																			1970 TOTAL	% OF 1970 TOTAL	1969 TOTAL	% OF 1969 TOTAL	SEROTYPE		
EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN						PACIFIC											
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK	HAW					
	7	3		2	12	2	14				4		2			5	1	27	1	28	262	1.1	182	0.8	<i>anatum</i>
	2	2		3	5	1	6										1				72	0.3	74	0.3	<i>boreilly</i>
6	13	11		7	5	1	30		1	1	12		3	1		3		62	8	8	660	2.7	505	2.4	<i>blockley</i>
2	4	1		5			2				1					1		9		3	92	0.4	78	0.4	<i>braenderup</i>
1	2	1		1	3	1	8				2		2			1		19		28	196	0.8	130	0.6	<i>bredeney</i>
	1	2											4				2	16	1		87	0.4	52	0.2	<i>chester</i>
		3																			24	0.1	15	0.1	<i>cholerae-suis k</i>
1	6	7		2	2	2	4				4		2	1				6		1	166	0.7	145	0.7	<i>cubana</i>
1	9	2		10	1	13					1		4			6		59	1	76	490	2.0	335	1.6	<i>derby</i>
15	40	26	11	3	5	8	47	4	24		16		1	7	2	25	29	113	2	10	2,504	10.3	1,988	9.3	<i>enteritidis</i>
	2	2		1	17		15										1	10		9	83	0.3	74	0.3	<i>give</i>
6	30	28	1	9	26	9	76	9	2		28		53	8		10	10	182	5	23	1,699	7.0	1,428	6.7	<i>heidelberg</i>
	4	8					1				1							1			109	0.5	93	0.4	<i>indiana</i>
9	23	32		5	27	3	47	1	5		13		16	1		9	9	166	2	97	1,214	5.0	1,096	5.1	<i>infantis</i>
5	21	6		2	9		2	2			1			6		9	9	84		14	459	1.9	173	0.8	<i>java</i>
	11	1	2	18	42	5	98						7	1			3	28			420	1.7	465	2.2	<i>javana</i>
	3	2			17		4						1	1				21		3	182	0.8	124	0.6	<i>litchfield</i>
							3							1				5		5	30	0.1	35	0.2	<i>livingstone</i>
5	5	5		4	6	1					1					4		48	1	8	340	1.4	253	1.2	<i>manhattan</i>
		3																			71	0.3	106	0.5	<i>miami</i>
	7	3			22		4											1			66	0.3	45	0.2	<i>mississippi</i>
1	1	6		1	11	1	23		1		4		5	2		4		54		2	394	1.6	314	1.5	<i>montevideo</i>
	4	10		1	10	3	12				2		3			1		25			276	1.1	242	1.1	<i>muenchen</i>
		1		1									1					3		3	48	0.2	32	0.2	<i>newington</i>
3	37	18	5	52	102	25	224	2	2	3	23		50	4		7	8	283	2	45	1,700	7.0	1,611	7.5	<i>newport</i>
	1	5	13		6	9	7	30	2		3		21	1		1	3	32	1	2	399	1.6	266	1.2	<i>oranienburg</i>
9	1	2	1	1	6	1	32				13		4	1		4	1	17		68	236	1.0	331	1.6	<i>panama</i>
8		2		1		1	17	1		2						5		10		2	205	0.8	166	0.8	<i>paratyphi B</i>
2	3						1	1	1		1		3		2	14	31	9			147	0.6	68	0.3	<i>reading</i>
8	11	13		1	23	1	32	2	1		5		2	2		32	14	82	4	15	1,157	4.8	986	4.6	<i>saint-paul</i>
	2	2			2						1				1	2	7	142		7	234	1.0	118	0.6	<i>san-diego</i>
							2	1			2			1				6			56	0.2	89	0.4	<i>schwarzengrund</i>
	1	1		1	6		6				3		1					2	12		86	0.4	78	0.4	<i>senftenberg</i>
1				2		3					3		2			1	1	1		1	54	0.2	43	0.2	<i>tennessee</i>
4	54	17		6	22	5	32	4	3		8			2		29	8	98	5	10	958	4.0	1,056	4.9	<i>thompson</i>
9	14		1	26	16	2	27	1		2	2	7	10	2	1	4	5	91	3	4	533	2.2	549	2.6	<i>typhi</i>
33	96	85	7	33	84	42	220	26	14		116		39	20	3	85	73	787	7	135	5,640	23.3	5,514	25.8	<i>typhimurium</i>
	13			2	29		1		8				4				5		3		277	1.1	259	1.2	<i>typhimurium co</i>
				7		1												1		93	104	0.4	54	0.3	<i>weltevreden</i>
	2			1	1	1					1		1					7		17	59	0.2	35	0.2	<i>worthington</i>
130	434	318	28	185	541	128	1039	56	62	8	271	7	241	62	9	253	223	2517	46	717	21,789	90.0	19,207	89.7	TOTAL
8	23	18	100	36	49	8	276	2	1	6	5	228	35	-	1	15	29	114	13	34	2,427		2,206		ALL OTHER*
138	457	336	128	221	590	136	1315	58	63	14	276	235	276	62	10	268	252	2631	59	751	24,216		21,413		TOTAL



TABLE II - Continued

NH	NJ	NM	REPORTING CENTER																1970 TOTAL	1969 TOTAL	SEROTYPE				
			NYA	NYB	NYC	NC	ND	OH	OKL	ORE	PA	RI	SC	SD	TEN	TEX	VT	VA				WAS	WVA	WIS	WYO
	1				1																		2	1	aberdeen
																							1	1	abony
																							2	—	aboyus-bovia
																							5	—	ade laide
																							4	—	agona
																							1	—	akanji
	4			1																			10	15	alachun
																							31	16	albany
																							1	—	alfons
																							5	29	amager
																							1	—	amsterdam
																							1	1	arechevalata
																							17	15	atlanta
																							1	—	babe lsborg
																							1	—	ball
	2			3		2	1																1	70	benfica
																							3	40	beria
																							9	—	biza
																							1	1	bomariensis
																							1	—	bonn
	1				1																		33	10	bovia-morbifans
																							3	3	bradford
																							5	5	brandenburg
																							1	—	bristol
																							1	13	california
																							1	3	canastot
																							1	—	caraga
																							2	—	caracas
																							5	3	carrau
																							23	25	carra
																							3	—	chailley
																							1	—	charly
	1																						11	12	cholerae-ausia
																							1	—	christiansborg
																							1	—	clabsoni
																							1	—	clifton
																							5	1	coeln
																							1	1	colespark
																							1	1	colorado
																							5	—	concord
																							2	1	degenia
																							10	12	drypool
																							8	7	dublin
																							14	6	dunsealdor
																							7	5	eastbourne
																							1	—	edinburg
																							21	33	eimsbuettel
																							1	1	elayed
																							3	—	flint
																							1	2	florida
																							3	3	gallinerum
																							17	14	gaminara
																							2	1	galom
																							1	2	galuni
																							1	3	georgia
																							1	—	gloustrup
																							2	—	goettingen
																							6	15	hawera
																							1	—	halla
																							1	—	hamburg
																							24	41	hartford
																							1	1	holcomb
																							8	5	ibadan
																							6	6	inverness
																							10	5	irumu
	1																						7	9	jamaica
																							3	—	johannesburg
																							3	—	knapstad
	1																						55	30	kentucky
																							1	14	kottbus
																							1	—	kurmasi
																							5	2	lexington
																							3	2	lindenburg
																							4	1	loma linda
																							20	15	lomita
																							25	16	lundon
																							1	—	love lace
																							2	—	luciana
																							1	11	maddala
																							6	2	manchester
																							1	2	maracibo
																							2	14	meleagridis
																							26	27	minneapolis

TABLE III. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY  
FROM HUMAN SOURCES DURING 1970

REPORTING CENTER	GROUP													TOTAL
	A	B	C	C1	C2	D	E	F	G	H	I	O	UNK	
ALABAMA				2		2							1	5
ALASKA		3		2	1								2	8
ARKANSAS		3		4	6	8		1						22
CALIFORNIA		4			1	1							3	9
CONNECTICUT		3												3
DISTRICT OF COLUMBIA		56	3	9	9	9							16	102
FLORIDA					3	1		1	1				2	8
HAWAII													1	1
IDAHO													1	1
ILLINOIS		6											2	8
INDIANA						1							2	3
IOWA		5	1											6
MASSACHUSETTS		9			1					1			2	13
MICHIGAN		2	1										2	5
MINNESOTA													1	1
MISSISSIPPI		53	2	7	10	5	7		9				7	100
MONTANA		1												1
NEBRASKA		10		2	1	5	1							19
NEVADA						1								1
NEW HAMPSHIRE		53		6	4	15	2						4	84
NEW MEXICO		100		41	39	36	3	1	6	1	1			228
NEW YORK - A													296	296
NEW YORK - BI						1	2							3
NEW YORK - C		13	7	1	1	3							22	47
NORTH CAROLINA				2										2
OKLAHOMA		1				1							2	4
OREGON		6	1	3	6	1							5	22
RHODE ISLAND	1	18	1		5	3							7	35
SOUTH CAROLINA		8	1	3	3	3							18	36
SOUTH DAKOTA						1							1	2
TENNESSEE		3											1	4
TEXAS		31		28	41	13	7	1	4		1	1	26	153
VIRGINIA													5	5
WISCONSIN		6		1									6	13
WYOMING		3											3	6
<b>TOTAL</b>	<b>1</b>	<b>397</b>	<b>17</b>	<b>111</b>	<b>132</b>	<b>111</b>	<b>20</b>	<b>4</b>	<b>20</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>438</b>	<b>1256</b>



TABLE IV. AGE AND SEX DISTRIBUTION OF INDIVIDUALS FROM WHOM ISOLATIONS OF  
SALMONELLAE WERE REPORTED DURING 1970

AGE (YEARS)	MALE	FEMALE	UNKNOWN	TOTAL	PERCENT	CUMULATIVE PERCENT
< 1	2,295	1,915	9	4,219	23.6	23.6
1-4	2,303	1,827	4	4,134	23.1	46.6
5-9	1,036	832	0	1,868	10.4	57.1
10-19	1,014	836	2	1,852	10.3	67.4
20-29	675	942	0	1,617	9.0	76.4
30-39	403	517	0	920	5.1	81.6
40-49	336	488	2	826	4.6	86.2
50-59	324	467	3	794	4.4	90.6
60-69	361	382	0	743	4.1	94.8
70-79	251	351	2	604	3.4	98.1
> 79	114	221	0	335	1.9	100.0
SUBTOTAL	9,112	8,778	22	17,912		
CHILD (UNSPECIFIED)	61	56	19	136		
ADULT (UNSPECIFIED)	89	144	18	251		
UNKNOWN	3,002	2,740	175	5,917		
TOTAL	12,264	11,718	234	24,216		
PERCENT	51.1	48.9				

TABLE V. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES (BY STATE) DURING 1970

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																													
	NEW ENGLAND					MIDDLE ATLANTIC			E. NORTH CENTRAL					W. NORTH CENTRAL					SOUTH ATLANTIC											
	ME	NH	VT	MAS	RI	CON	NY	NJ	PA	OH	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
<i>anatum</i>	1	5		5		11	17	1		4	7	9	3	10	172					7		4					2	7	12	17
<i>bareilly</i>	4								1	1	4			6								3								
<i>blockley</i>	1			5				1	2	4	2	1	2	5	12		4			1	5	11				17	2	47	1	
<i>braenderup</i>		1		1		2		2	2	1				1	1		15											2		
<i>bredeney</i>				2		10		1	1	7	4	12	4	13					3	2		3				1	1			
<i>chester</i>				1				1		8				14	18	3	1												3	
<i>cholerae-suis v kun</i>				1						5	110	61	1			7	2				1	1				16	27		5	
<i>cubana</i>	12				3		6	2	6					1	38		1					5	3						1	
<i>derby</i>				2				3	1	5	7	5	7	15	2				5	1	1	1	3				1	7	7	
<i>enteritidis</i>		4		4		1	1	12	3	12	8	5	9	6		1		1				1	1	1		7	2	25	2	
<i>give</i>						1				5	1	1		1																
<i>heidelberg</i>				12	2	4		3	5	10	7	16	70	195		15	5	3	1	1	4	12				5	9	65	8	
<i>indiana</i>				8				23	1	4			12	1														7	3	
<i>infantis</i>	1	1		30		2	2	8	6	24	25	34	10	13	6	3		6	3	1	1	3	1	1		3	2	45	2	
<i>java</i>					6	1	2	7			3		2	4	1					3		2							2	
<i>javana</i>				1				1		3				1														1		
<i>litchfield</i>					4		1			5			1		5						1							1	3	1
<i>livingstone</i>									2			21	1															2		
<i>manhattan</i>					1			1		1			2	6	3	2											4	2		
<i>miami</i>									7													1							2	
<i>mississippi</i>								1																1						
<i>montevideo</i>						4		5	10	3	28	10	12	5	28		34		2	1	4	4	17			2	1	86	2	
<i>muenchen</i>				4		2							3	3		2					2		4					3	4	5
<i>newington</i>								1			1	1	2	5					3				1				1	1	1	
<i>newport</i>				2		6	7	3	2	4	11	5	2	6	21	2	15		2	3	48	2	9			1	3	4	6	
<i>oranienburg</i>				1		3		8	3	7	14	3		9	39		29			2			4					4	41	
<i>panama</i>								1								1					2									
<i>paratyphi B</i>													1																	
<i>reading</i>	1										36		1	19									1				1	1		
<i>saint-paul</i>				4		15	1	6	7	5	12	8	4	121	92	7	4	4	13		2	41	2	1		2	5	22	4	
<i>san-diego</i>	1			1							1				58	1	1		6	1							3	2	3	
<i>schwarzengrund</i>						43	1	2	5	5		8	2	13	3	24		1									3			
<i>sentenberg</i>	21		2	1		1	3	9	2	5	6	38	4	3	79				1	1	3	7					2	7	4	
<i>tennessee</i>	2					2		4		2	5	3	7	135	2	2			2		2	1	31					9		
<i>thompson</i>	1	2		5		3		2	3	13	11	5	6	34	4		22				1	3	7	1			4	3	80	4
<i>typhi</i>																														
<i>typhimurium</i>	5			18		13	1	9	14	22	87	25	54	92	241	10	12		32	12	16	4	8				6	9	25	37
<i>typhimurium v cop</i>	3	4		21	1	3		7	2		2	7	10		23	4			6	1		5	7				16	7	39	3
<i>weltevreden</i>													1																	1
<i>worthington</i>						1			1	4				3	4	1	2		3			2	12				11	4	64	2
TOTAL	53	17	2	129	4	97	75	69	114	115	386	268	213	432	1263	52	192	9	95	32	92	88	149	3	3	-	105	97	565	160
ALL OTHER	9	4	-	11	2	40	7	38	20	60	91	41	71	48	203	4	38	1	12	4	9	44	48	3	2	-	12	9	57	51
TOTAL	62	21	2	140	6	137	82	107	134	175	477	309	284	480	1466	56	230	10	107	36	101	132	197	6	5	-	117	106	622	211

TABLE V-Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				1970 TOTAL	1969 TOTAL	SEROTYPE		
EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN						PACIFIC										
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK	HAW				
4	15	6	2	4	2		11		1		2	3	12	63		2	3	46		448	919	534	<i>anatum</i>	
6		1	5	1														2		9	43	31	<i>bareilly</i>	
	8	10	2	5			3						4				3	34		16	208	167	<i>blockley</i>	
	2	2		1														1			34	7	<i>braenderup</i>	
1		1		3		1	16	1	2				3	18		3	1	13		57	184	174	<i>bredeney</i>	
16	22	3	11	4	2		2						1				1	3			54	45	<i>chester</i>	
			7	2	39		1					6	2					6		9	298	680	<i>cholerae-suis v kum</i>	
3	2		3	3	1		9						2	9		2		17		760	150	114	<i>cubana</i>	
1		5	1				2							1		5	6	7		10	884	245	<i>derby</i>	
																					144	146	<i>enteritidis</i>	
1			1				1						1	1		3		18		9	44	44	<i>glve</i>	
2	8	26	4	21	3		5	1			2		25	161		9	6	86		66	871	966	<i>heidelberg</i>	
		1	1																		61	17	<i>indiana</i>	
5		17	7	7	4	3	25		2			2	1	14		4	10	58		42	434	279	<i>infantis</i>	
1							1											6			41	20	<i>java</i>	
					1		9											1			18	19	<i>javana</i>	
																					22	9	<i>litchfield</i>	
	1	1		3	2		3							4				27		15	72	167	<i>livingstone</i>	
																	1	13		23	69	62	<i>manhattan</i>	
																					10	8	<i>miami</i>	
	5	6	9	1	2		28						1	12	4			7		4	3	—	<i>mississippi</i>	
1														20						1	55	304	<i>montevideo</i>	
3	1		1											1				5		70	98	62	<i>muenchen</i>	
4	3		1	2		7	14	2	1		3		12	5		3	2	25		25	273	160	<i>newington</i>	
																							<i>newport</i>	
1	1		2		1	1	7											41		1	222	102	<i>oranienburg</i>	
			1				4											1		99	109	30	<i>panama</i>	
																					2	11	<i>paratyphi B</i>	
1							2							14				18			106	68	<i>reading</i>	
2	1	3	1	3			17		1				3	20		9	6	54		30	532	463	<i>saint-paul</i>	
				2										60				16	55		211	187	<i>san-diego</i>	
3							1				1			49				1	20		185	64	<i>schwarzengrund</i>	
14	1	3	8	2	10		31					3		24				7		18	320	257	<i>sentenberg</i>	
1			1	7							1			16		1	1	27		3	267	158	<i>tennessee</i>	
	10	21	10	5	4	2	2		4					12		5		27		3	319	315	<i>thompson</i>	
																							<i>typhi</i>	
55	20	3	10	16	16	9	5	1	5		20		48	13		31	10	327		310	1651	1204	<i>typhimurium</i>	
6	2	2	6	2	5		2	1	3		2		12	13	1	4	6	6			242	272	<i>typhimurium v cop</i>	
																					48	50	3	<i>weltevreden</i>
1	20	22	5	2				1						56			1	7		94	323	157	<i>worthington</i>	
132	122	133	99	83	66	63	202	7	19	—	31	14	127	586	5	87	75	965	—	2170	9865	7603	TOTAL	
37	32	17	34	16	29	8	149	—	3	—	3	19	21	175	1	33	15	223	1	33	1788	1850	ALL OTHER	
169	154	150	133	99	95	71	351	7	22	—	34	33	148	761	6	120	90	1188	1	2203	11653	9453	TOTAL	

TABLE VI. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES (BY CATEGORY) DURING 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>	35	87	26	25	1	22	196	185		13	198
<i>bareilly</i>	6	1	4			2	13	13		7	20
<i>blockley</i>	126	23	10		2	11	172	2		1	3
<i>braenderup</i>	5	2					7				—
<i>bredeney</i>	5	32	2	2	1	2	44	50		21	71
<i>chester</i>	4	28	2	1		2	37	5			5
<i>cholerae-suis k</i>	1	1	289	1		1	293				—
<i>cubana</i>	8		1	1		2	12	62		19	81
<i>derby</i>	3	30	43	3		7	86	25		16	41
<i>enteritidis</i>	67	2	6	13		19	107			1	1
<i>give</i>	1	15				2	18	7		2	9
<i>heidelberg</i>	133	502	26	35	6	19	721	12		13	25
<i>indiana</i>	6	6	2	2			16	7		6	13
<i>infantis</i>	142	38	15	10		9	214	54	1	28	83
<i>java</i>		1	1			5	7				—
<i>javana</i>			1	1		2	4				—
<i>litchfield</i>	4	1	1		3	1	10				—
<i>livingstone</i>	2	4	11			2	19	20		23	43
<i>manhattan</i>	19	10	4	1		1	35	3		1	4
<i>miami</i>		2					2				—
<i>mississippi</i>							—				—
<i>montevideo</i>	106	13	3	2		2	126	82		27	109
<i>muenchen</i>	4	24	2	1		3	34	2			2
<i>newington</i>	1	6	5		4	1	17	5		3	8
<i>newport</i>	13	26	12	73	11	10	145	4		3	7
<i>oranienburg</i>	9	5	1			4	19	90		17	107
<i>panama</i>		2	60			1	63				—
<i>paratyphi B</i>							—				—
<i>reading</i>	4	95	1	1		2	103			1	1
<i>saint-paul</i>	102	315	12	9	4	11	453	9			9
<i>san-diego</i>	3	172	1	1			177	29		1	30
<i>schwarzengrund</i>	4	66	4			1	75	33		10	43
<i>senftenberg</i>	37	113	2		1	4	157	75		46	121
<i>tennessee</i>	20	22	2	1		1	46	166		8	174
<i>thompson</i>	160	12	10	2	1	8	193	7		5	12
<i>typhi</i>							—				—
<i>typhimurium</i>	127	226	91	498	75	178	1195	9		11	20
<i>typhimurium co</i>	106	5	13	59	14	34	231	1			1
<i>weltevreden</i>			19			7	26				—
<i>worthington</i>	133	35	3		1	9	181	30		10	40
<b>TOTAL</b>	1396	1922	685	742	124	385	5254	987	1	293	1281
<b>ALL OTHER*</b>	238	145	63	128	10	79	663	497	4	244	745
<b>TOTAL</b>	1634	2067	748	870	134	464	5917	1484	5	537	2026

\*See Table VII

TABLE VI - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	1970 TOTAL	1969 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	LEAF MEAT	DAIRY PRODUCTS	REHEATED	1970 SUBTOTAL				
7	4	21	8	437	2	21	489	25	919	534	<i>anatum</i>
	3	1			1	5	7		43	31	<i>bareilly</i>
7		8	11	3	1	1	24	2	208	167	<i>blackley</i>
		12		1		2	15	1	34	7	<i>braenderup</i>
1	11	1	1	56	1	3	61	7	184	174	<i>bredenev</i>
3		1			24	1	1	11	54	45	<i>Chester</i>
						5	30	2	298	680	<i>cholerae-suis K</i>
4	1	4	7	732		1	744	27	150	114	<i>cubana</i>
6	7	9	4	2	1	3	19	8	884	245	<i>derby</i>
								4	144	146	<i>enteritidis</i>
2	1	4	40	9	2	2	11	3	44	44	<i>give</i>
7	3	4		40	2	2	86	29	871	966	<i>heidelberg</i>
1		23		8	8	8	31		61	17	<i>indiana</i>
19	4	27	3	39	1	29	99	15	434	279	<i>infantis</i>
5	27							2	41	20	<i>java</i>
	5			3		5	8	1	18	19	<i>javiana</i>
	11			8		1		1	22	9	<i>Hitchfield</i>
1	4	3	1	21		1	9		72	167	<i>Livingstone</i>
8							25	1	69	62	<i>manhattan</i>
									10	8	<i>miami</i>
1	2	27	25	4	12	12	80	19	3		<i>mississippi</i>
1	2	4		2	1	1	7	2	337	304	<i>montevideo</i>
4	6	4		70		1	71	2	55	51	<i>munichen</i>
8	32	1	5	27	4	10	47	34	98	62	<i>newington</i>
									273	160	<i>newport</i>
3	5	11		20	1	48	80	8	222	102	<i>orantenburg</i>
	2	1	1	38			40	4	109	30	<i>panama</i>
1	1	1							2	11	<i>paratyphi B</i>
1		1				4	1		106	68	<i>reading</i>
10	15	3	12	20		4	39	6	532	463	<i>saint-paul</i>
	1	4	4	1	4	1	2	1	211	187	<i>san-diego</i>
1		4		4	4	49	65	1	185	64	<i>schwarzengrund</i>
		5	1	7	16	7	36	6	320	257	<i>senftenberg</i>
1	2	4		1	5	27	37	7	267	158	<i>tennessee</i>
5	9	58	5	1	1	4	69	31	319	315	<i>thompson</i>
89	11	16	14	267	2	4	303	33	1651	1204	<i>typhi</i>
6	1		1	22		1	1	2	242	272	<i>typhimurium</i>
1				86	3		23	4	50	3	<i>typhimurium co</i>
3		4	2				95		323	157	<i>weltevreden</i>
											<i>worthington</i>
206	170	253	145	1921	79	257	2655	299	9,865	7,603	TOTAL
63	84	81	7	16	20	54	178	55	1,788	1,850	ALL OTHER*
269	254	334	152	1937	99	311	2833	354	11,653	9,453	TOTAL

TABLE VII. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES (BY CATEGORY) DURING 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
agbeni											
agona		2					3	1			1
alachua	1	2				1	5	7			8
albany	7	6					16	1		1	2
amager	2	1		1			3				
amsterdam	1						1	1			1
arkansas										2	2
atlanta											
babelsberg								2			2
bern											
berta	5		1	7			13				
binza	2	10					14	36		13	49
boernum								10		5	15
bovis-morbificans		1				1	1				
brancaster							1				
california	17	1	4				22	7		5	12
carrou			1	1			2	1		1	2
cerro	5					2	7	31		4	35
chameleon											
champaign								1			1
cholerae-suis			22	1			23				
colorado											
corvallis											
degenie			1				1				
drypool	1	8		1			11	36		20	56
dublin	1			88		2	91				
dueseldorf		1					1			1	1
eimsbuettel	37	19	6			10	72	99		52	151
essen								1			1
florida				1			1				
gallinarum	2	4					6				
gaminara											
gatuni								1			1
georgia										1	1
godesberg								1			1
good											
grumpensis						4	4			2	2
habana								2			2
haddon	2						2	5		1	6
halmstad								1			1
hartford		1	2	1	1		5				
hato											
heilbron								1			1
hillbrow		1									
illinois		1					1	6			6
johannesburg		1	1				2	6		6	12
kentucky	7	14		1			29	40		16	56
kingston				1		7	8	1			1
kottbus	5		1				6	1			7
lexington	1					3	4	3	2	3	8
lille				1			1			1	1
lomita											
london		1	2				3	3			3
luciana											
madeira								9		3	12
mancheater											
manila		1					1	2		6	8
marina											
matadi											
meleagridis	3	1	1	1			6	2		1	3
menhaden								2			2
michigan											
minneapolis											
minnesote	5	3				10	28	53		7	60
molade											
muenster	7	4	3	1		2	17	11		2	13
new-brunswick								1			1
norwich				1	1		2				
ohio	1						1	5		4	9
ordonez							1				
orion		1									
oslo						1	2	3		8	11
pensacola					1		1				
phoenix			1				1				
pomona											
poona			1		1	5	7	3			
portsmouth			1				1			1	1
pullorum	39	5					44				
rubislaw		3			2		5				
saka											
saphra											
siegburg	3	2	3	1			9				
simi		1	1			2	4	34		10	44
simsbury	37	1	2	1	1		42	5	2		7
stanley		1					1				
taksony		6		1		2	9	16		3	19
tallahassee											
tanger											
thomsville		5	1	2		3	11	8		52	60
tuindorp											
typhi-suis			7				7				
urbana	1						2	5		2	7
virchow											
warragul											
wasenaar											
welikade											
westerstede	2					1	1				
westhampton							2				
zanzibar	4						4	3			3
TOTAL	198	107	62	121	7	67	562	469	4	235	708
NOT TYPED*	40	38	1	7	3	12	101	28		9	37
TOTAL	238	145	63	128	10	79	663	497	4	244	745

\*See Table VIII.

TABLE VII - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	1970 TOTAL	1969 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
1		8		1			1	1	1	agbani	
		2					1	5	3	agona	
								22	60	alachu	
								23	39	amafer	
								3	5	amferdan	
								2	2	aransas	
								2	2	atlanta	
								2	1	babe laberg	
								4	7	bern	
2		2					2	20	13	bera	
2	4						1	66	179	birma	
1	1							14	4	bovis-morhicans	
								4	4	brancaster	
								1	1	california	
7	1	4	1	6			2	41	47	carrau	
	1	23						13	2	cerro	
								80	108	chame leon	
								1	1	champiagn	
								23	25	choyere-suis	
								1	1	colorado	
								1	3	degenia	
								2	2	degenia	
1	1	1		1			1	69	59	drypool	
								92	123	dublin	
								2	1	dueseldor	
								239	163	emsbuetel	
								1	4	essen	
								1	1	florida	
1								7	11	gallinarum	
1								1	1	georgia	
								1	5	georgia	
								1	1	godeahberg	
1	1							7	2	good	
								2	3	grampensis	
								2	2	hadana	
								1	1	hadana	
								2	2	halmstad	
4	2							14	5	hartford	
								1	1	hart	
								3	7	heilbron	
								1	1	hillbrow	
								10	7	illinois	
								2	24	johannesburg	
								99	156	keaticky	
								8	11	kirkston	
								8	10	kingston	
								23	10	lexington	
								2	5	lille	
								2	3	london	
								7	8	london	
								1	7	lucerna	
								12	7	madrid	
								1	1	madrid	
								1	5	manchester	
								10	8	manila	
								1	2	marid	
								36	42	medford	
11	10							14	1	melagredis	
	1							2	2	melagredis	
1	1							4	1	melbourne	
1								2	1	michigan	
1								2	1	michigan	
1								104	97	minneapolis	
1								4	5	minnesota	
								31	9	moelde	
								1	1	munster	
								1	29	new-zelandswick	
								2	2	new-zelandswick	
								22	5	ohio	
								1	1	ordonez	
								14	26	orion	
								2	11	oslo	
								1	1	oslo	
								1	1	pensacola	
								4	8	phoenix	
								1	1	poenoria	
								24	8	poona	
5	11							49	49	portsmouth	
10	5							50	10	rubislaw	
1								13	10	rubislaw	
								1	1	saka	
								2	4	sanpau	
								78	71	stieburg	
1	1							1	1	sui	
								5	7	sui	
								1	1	simebury	
								30	15	stoney	
								1	1	stoney	
								3	2	tallahassee	
								1	1	tanger	
								76	32	thomasville	
								2	1	tundorp	
								7	14	typhi-suis	
	21							33	44	urbana	
	1							1	2	urbana	
	4							4	5	warsaw	
								1	1	warsaw	
								1	5	westland	
								2	8	westermede	
								3	5	westempcon	
								4	1	zenzibar	
59	75	80	5	14	20	50	48	1,621	1,711	TOTAL	
4	9	1	2	2	-	4	7	167	139	NOT TYPED*	
63	84	81	7	16	20	54	55	1,788	1,850	TOTAL	

TABLE VIII. SALMONELLAE FROM NONHUMAN SOURCES  
 REPORTED BY GROUP IDENTIFICATION ONLY DURING 1970

SOURCES	GROUP																		TOTAL
	A	B	C1	C2	D	E	E1	G	H	I	K	L	M	O	Q	R	W	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	1	33	3			4	2	1								1	1	55	101
ANIMAL FEEDS	1	2	5						1		1	1	17		1			8	37
WILD ANIMALS AND BIRDS		3																1	4
REPTILES AND ENVIRONMENT		1			1					3								4	9
HUMAN DIETARY ITEMS		2	3	1										1				2	9
MISCELLANEOUS		1	1		1	1								1		1		1	7
UNKNOWN																			-
<b>TOTAL</b>	<b>2</b>	<b>42</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>17</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>71</b>	<b>167</b>



TABLE IX. SALMONELLA ISOLATIONS FROM HUMAN SOURCES BY SEROTYPE AND YEAR, 1964-1970

SEROTYPE	1964	1965	1966	1967	1968	1969	1970	SEROTYPE	1964	1965	1966	1967	1968	1969	1970
<i>aba</i>						3		<i>bonn</i>							1
<i>abaetetuba</i>						1		<i>bovis-</i>							
<i>aberdeen</i>	1		1		1	1	2	<i>morbilligans</i>	7	31	12	6	2	10	33
<i>abony</i>	1		1				1	<i>bradford</i>	2		4	1	2	2	3
<i>abortus-bovis</i>			2	2			2	<i>braenderup</i>	102	85	111	83	139	78	92
<i>accra</i>					1			<i>brancaster</i>	1			1		2	
<i>adelaide</i>	6	1		4	1		5	<i>brandenburg</i>	4	1	2	2	5	4	5
<i>agama</i>			3					<i>bredeney</i>	220	160	159	120	172	130	196
<i>agona</i>				1	1		4	<i>bristol</i>	1						1
<i>ahuja</i>					1			<i>brunei</i>						1	
<i>akanji</i>							1	<i>bukavu</i>						2	
<i>alabama</i>				1	1			<i>businga</i>						1	
<i>alachua</i>	5	5	6	13	23	15	10	<i>butantan</i>		1					
<i>albany</i>	6	6	14	5	18	16	31	<i>california</i>	31	22	15	16	22	13	32
<i>albuquerque</i>						1		<i>cambridge</i>	1	3		1		1	
<i>allendale</i>		1				1		<i>canastot</i>						3	1
<i>altona</i>							1	<i>canoga</i>							1
<i>amager</i>	10	1	3	2	1	29	5	<i>caracas</i>	1						2
<i>amersfoort</i>					1			<i>carno</i>							1
<i>amsterdam</i>	1						1	<i>carrau</i>	3	7	6	3	2	3	5
<i>anatum</i>	279	300	333	297	209	182	262	<i>cerro</i>	9	13	12	9	12	25	23
<i>ardwick</i>	1							<i>chailey</i>		1	6				3
<i>arechavaleta</i>	1		1		1	2	1	<i>chameleon</i>		1				1	
<i>arkansas</i>		1	1			1		<i>champaign</i>		1					
<i>atlanta</i>	5	8	19	11	10	15	17	<i>charity</i>							1
<i>austin</i>			1					<i>chester</i>	75	115	109	100	58	52	87
<i>azteca</i>						1		<i>chingola</i>		2					
<i>babelsberg</i>							1	<i>cholerae-suis</i>	15	10	10	6	15	12	11
<i>ball</i>			2	1			1	<i>cholerae-suis</i>							
<i>bareilly</i>	99	104	78	81	95	74	72	<i>var kunzendorf</i>	31	36	26	20	29	15	24
<i>belcm</i>		1		2		3		<i>christiansborg</i>							1
<i>benfica</i>							1	<i>claibornei</i>				1		1	1
<i>berlin</i>			2	13	5	2		<i>clifton</i>		1					1
<i>bern</i>					1			<i>coeln</i>					3	1	5
<i>berta</i>	48	47	34	37	30	40	70	<i>coleypark</i>			2		2	1	1
<i>bilthoven</i>		3						<i>colorado</i>	2	3	1	3		1	1
<i>binza</i>	22	20	24	14	6	9	9	<i>concord</i>	2		1	2	3		5
<i>birkenhead</i>	1							<i>coquilhatville</i>	3						
<i>blegdam</i>	1	1			1			<i>corvallis</i>		1	1				
<i>blockley</i>	427	401	603	519	487	505	660	<i>cubana</i>	63	145	131	66	59	145	166
<i>bonaire</i>			1			1		<i>daytona</i>		2	3		1	2	
<i>bonariensis</i>	1		1			1	1	<i>decatun</i>	2				1		
								<i>degania</i>						1	2
								<i>denver</i>	1	1	2	3			
								<i>derby</i>	2360	632	404	326	411	335	490





TABLE IX.—Continued

SEROTYPE	1964	1965	1966	1967	1968	1969	1970	SEROTYPE	1964	1965	1966	1967	1968	1969	1970
<i>singapore</i>				1		1		<i>58a</i>							1
<i>sohanina</i>			1												
<i>solna</i>			1					<i>Group A</i>	6	2	1	1		3	1
<i>stanley</i>	9	7	6	7	7	13	13	<i>Group B</i>	276	293	312	493	401	340	397
<i>stanleyville</i>						1		<i>Group C</i>				2	13	10	17
								<i>Group C<sub>1</sub></i>	71	91	140	138	58	99	111
<i>stockholm</i>			1			5		<i>Group C<sub>2</sub></i>	40	57	61	132	72	128	132
<i>suberu</i>							1								
<i>sundsvall</i>	1	1	3	1			1	<i>Group D</i>	37	47	54	77	70	98	111
								<i>Group E</i>	30	50	13	36	9	16	20
<i>takoradi</i>		3		2				<i>Group E<sub>1</sub></i>							1
<i>taksony</i>	1	1		1	1		4	<i>Group E<sub>4</sub></i>					4		
<i>tallahassee</i>	3	4	7	6	8	12	8	<i>Group F</i>				1	2		4
<i>tamale</i>		1													
<i>te-l-el-kebir</i>						1		<i>Group G</i>	2	4	6	7	8	17	20
								<i>Group H</i>	1		2	9	3	4	2
<i>tennessee</i>	332	173	133	63	85	43	54	<i>Group I</i>		1		1		1	2
<i>texas</i>			1				1	<i>Group K</i>				1			
<i>thomasville</i>	3	3	5	3	1	4	7	<i>Group L</i>		1					
<i>thompson</i>	421	562	579	508	673	1056	958								
<i>travis</i>	2							<i>Group M</i>				1			
								<i>Group O</i>	4	9	3	3	3	3	1
<i>typhi</i>	703	719	654	690	609	549	533	<i>Group V</i>							1
<i>typhi-murium</i>	5656	6526	5744	5530	5147	5514	5640	<i>Group 058</i>							1
<i>typhi-murium</i> <i>var copenhagen</i>	206	203	178	273	316	259	277								
<i>uganda</i>	5	2		1	1	1	4								
<i>upsala</i>							1								
<i>urbana</i>	25	33	28	18	29	49	59								
<i>uzaramo</i>							1								
<i> vejle</i>				2											
<i>victoria</i>					2										
<i>virchow</i>	4	2	4	4	6	7	4								
<i>wagenia</i>				1											
<i>wandsworth</i>					1										
<i>wassenaar</i>			2		1	2									
<i>welikada</i>						3									
<i>weltevreden</i>	23	35	45	61	78	54	104								
<i>weslaco</i>	1		1			1	1								
<i>westerstede</i>	1	2	6	1			3								
<i>westhampton</i>	1	7	1		3	2	2								
<i>willemstad</i>					2	2									
<i>worcester</i>				1											
<i>worthington</i>	48	46	44	24	22	35	59								
<i>yalding</i>		1						Unknown	96	115	81	205	558	498	438
<i>zanzibar</i>					1			TOTAL	21,113	20,865	20,040	19,723	19,740	21,413	24,216

Figure 1 REPORTED HUMAN AND NONHUMAN ISOLATIONS OF SALMONELLAE UNITED STATES, 1963 - 1970

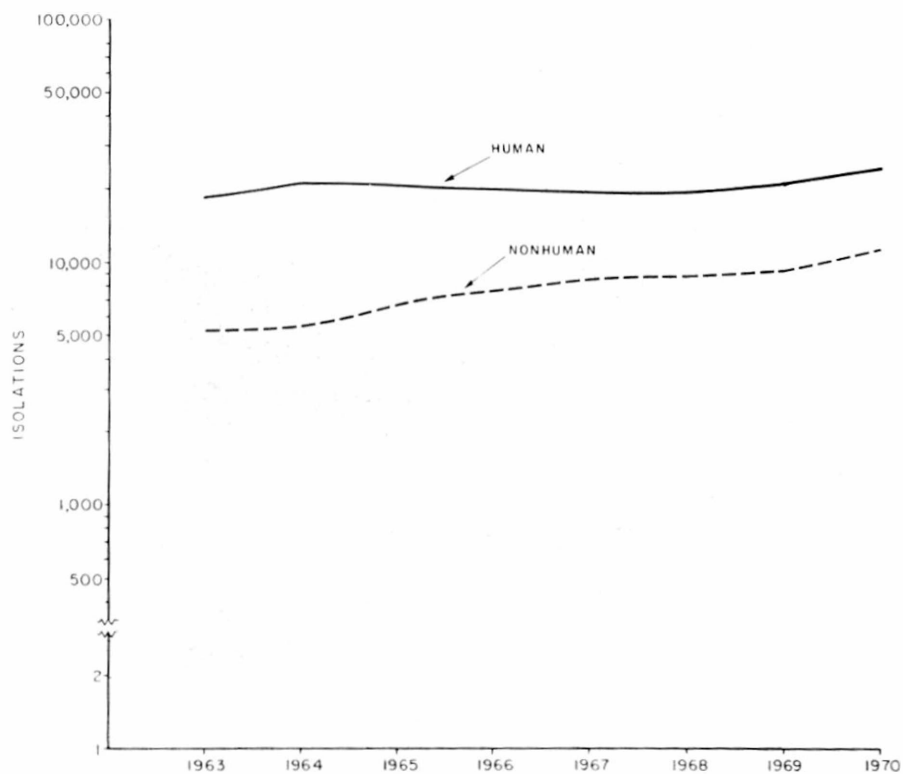


Figure 2 REPORTED HUMAN ISOLATIONS OF SALMONELLAE, UNITED STATES, 1965 - 1970

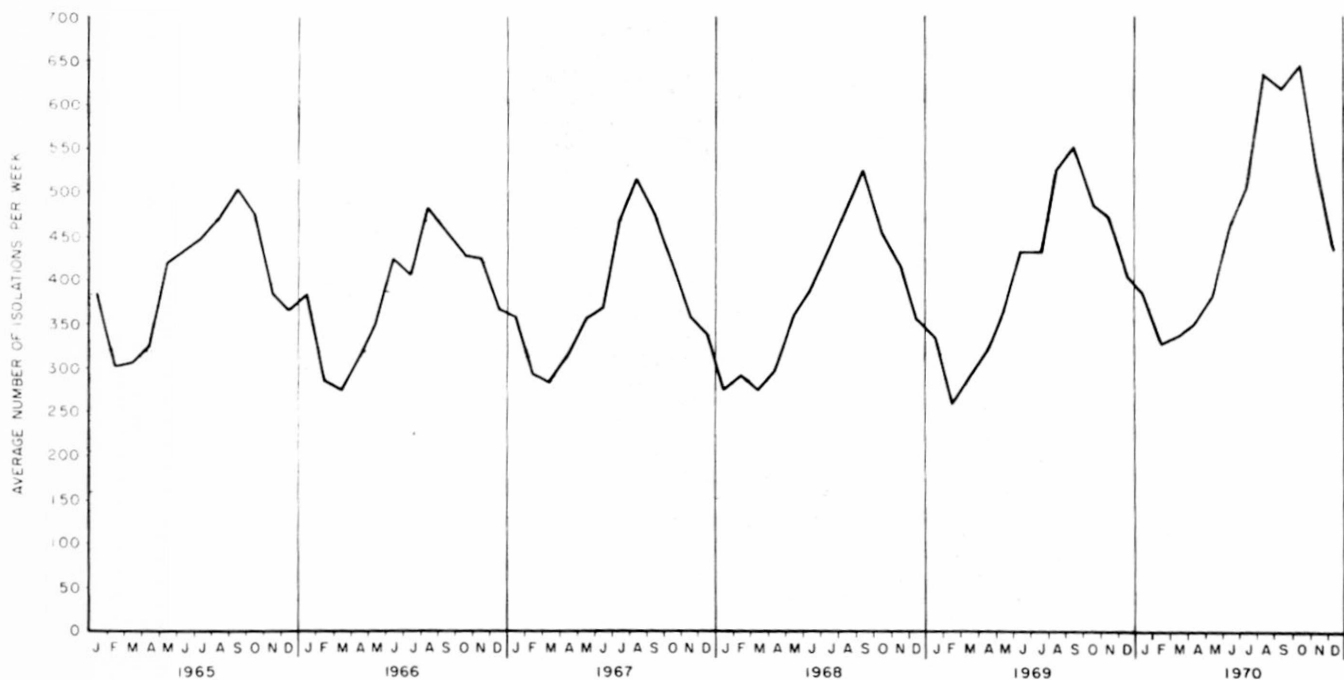
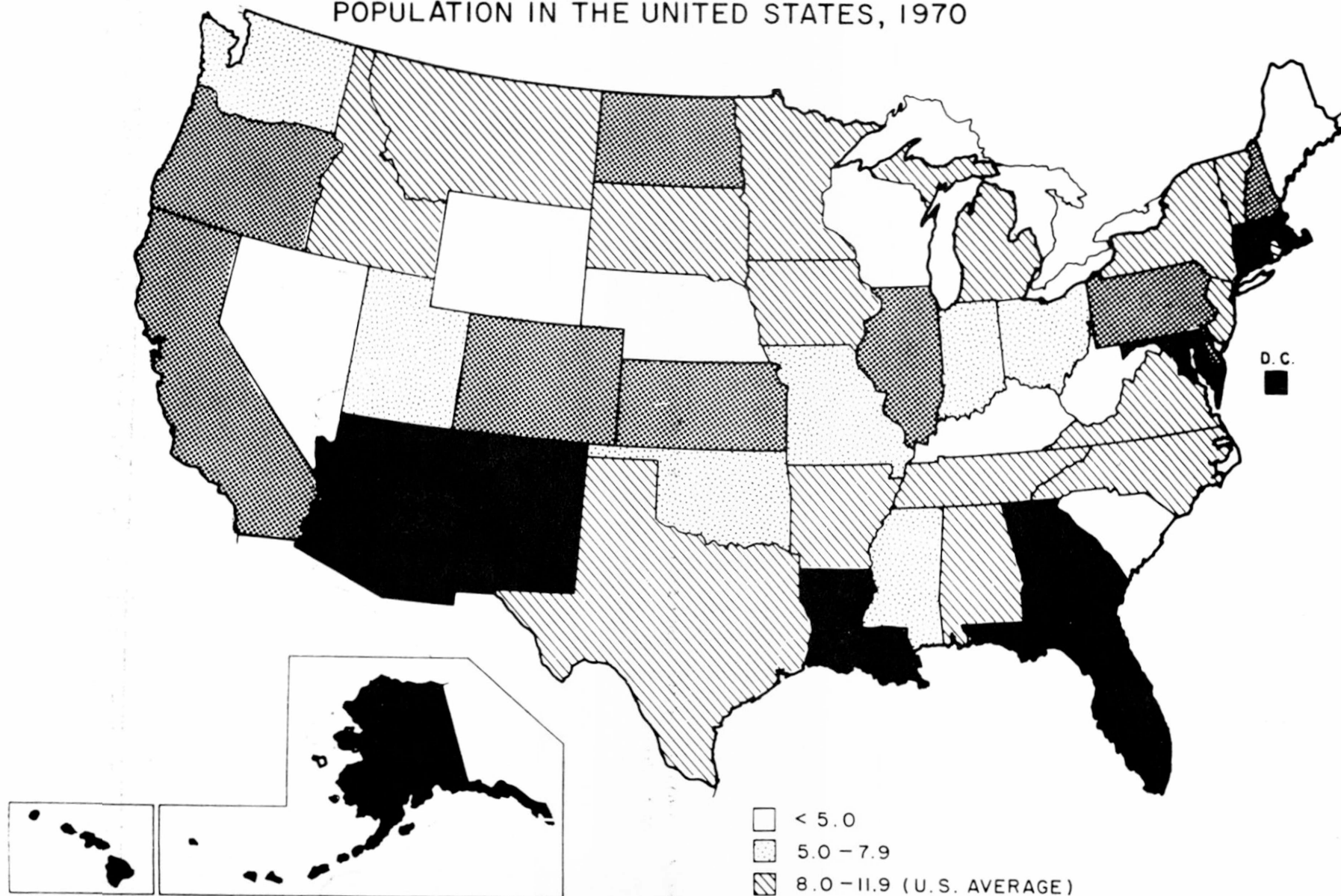
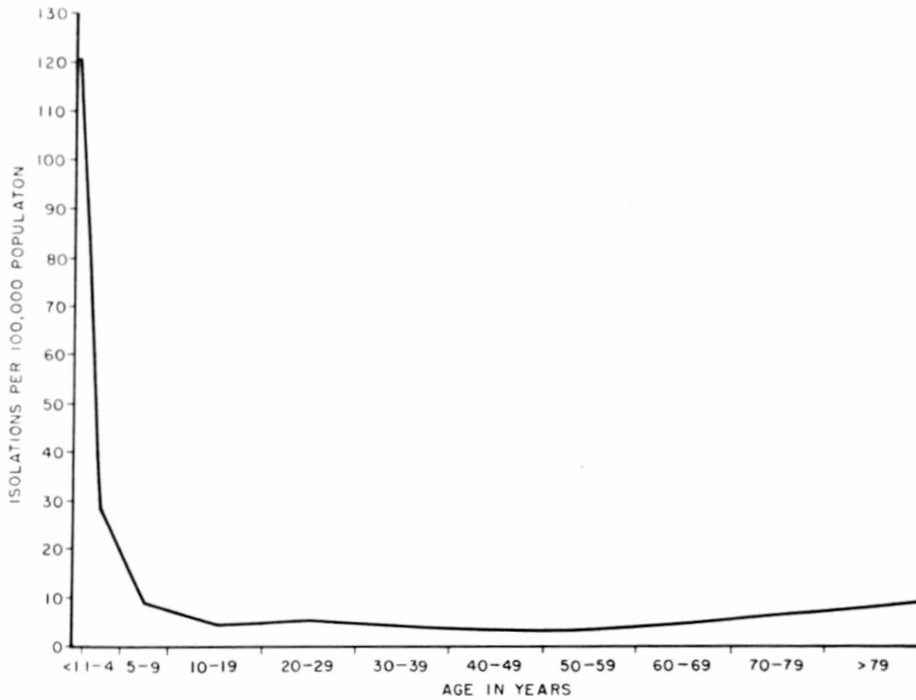


Figure 3 NUMBER OF HUMAN ISOLATIONS OF SALMONELLA PER 100,000 POPULATION IN THE UNITED STATES, 1970



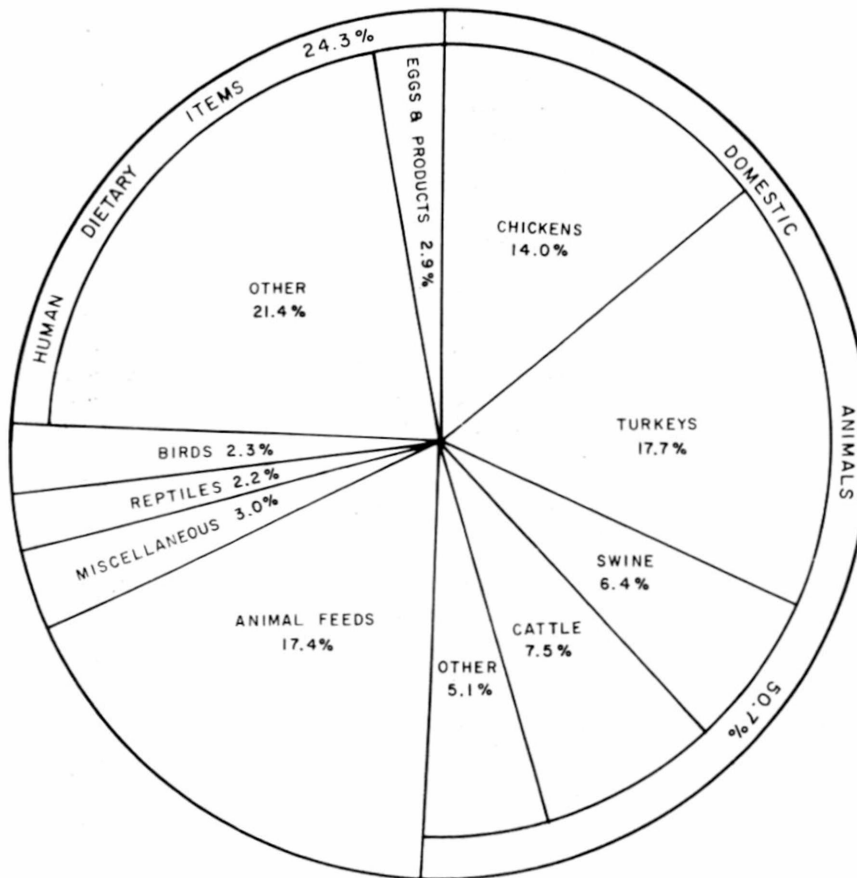
SOURCE: CURRENT POPULATION REPORT'S SERIES  
P-25, NO. 414

Figure 4 RATE OF HUMAN ISOLATIONS OF SALMONELLAE, BY AGE GROUP, 1970\*



\*POPULATION DATA OBTAINED FROM CURRENT POPULATION REPORTS, SERIES P-25, NO. 428, AUGUST 19, 1969, AND NO. 441, MARCH 19, 1970.

Figure 5 NONHUMAN SALMONELLA ISOLATIONS FROM THE INDICATED SOURCES IN THE UNITED STATES, 1970



**STATE EPIDEMIOLOGISTS AND  
STATE LABORATORY DIRECTORS**

Key to all disease surveillance activities are the physicians who serve as State epidemiologists. They are responsible for collecting, interpreting, and transmitting data and epidemiological information from their individual States; their contributions to this report are gratefully acknowledged. In addition, valuable contributions are made by State Laboratory Directors; we are indebted to them for their valuable support.

<i>STATE</i>	<i>STATE EPIDEMIOLOGIST</i>	<i>STATE LABORATORY DIRECTOR</i>
Alabama	Frederick S. Wolf, M.D.	Thomas S. Hosty, Ph.D.
Alaska	Donald K. Freedman, M.D.	Frank P. Pauls, Dr.P.H.
Arizona	Philip M. Hotchkiss, D.V.M.	H. Gilbert Crecelius, Ph.D.
Arkansas	John A. Harrel, Jr., M.D.	Robert T. Howell, Dr. P.H.
California	James Chin, M.D.	Howard L. Bodily, Ph.D.
Colorado	C.S. Mollohan, M.D.	C.D. McGuire, Ph.D.
Connecticut	James C. Hart, M.D.	William W. Ullmann, Ph.D.
Delaware	Floyd I. Hudson, M.D.	Irene V. Mazerka, M.D.
District of Columbia	William E. Long, M.D.	Alton Shields, Dr.P.H.
Florida	E. Charlton Prather, M.D.	Nathan J. Schneider, Ph.D.
Georgia	John E. McCroan, Ph.D.	Earl E. Long, M.S.
Hawaii	Harry L. Boyett, M.D.	Henri Minette, Dr.P.H.
Idaho	John A. Mather, M.D.	Darrell W. Brock, Dr.P.H.
Illinois	Norman J. Rose, M.D.	Richard Morrissey, M.P.H.
Indiana	Charles L. Barrett, M.D.	Josephine Van Fleet, M.D.
Iowa	Arnold M. Reeve, M.D.	W.J. Hausler, Jr. Ph.D.
Kansas	Don E. Wilcox, M.D.	Nicholas D. Duffett, Ph.D.
Kentucky	Calixto Hernandez, M.D.	B.F. Brown, M.D.
Louisiana	Charles T. Caraway, D.V.M.	George H. Hauser, M.D.
Maine	O. Thomas Feagin, M.D. (Acting)	Charles Okey, Ph.D.
Maryland	Howard J. Garber, M.D.	Robert L. Cavanaugh, M.D.
Massachusetts	Nicholas J. Fiumara, M.D.	Geoffrey Edsall, M.D.
Michigan	Norman S. Hayner, M.D.	Kenneth R. Wilcox, Jr., M.D.
Minnesota	D.S. Fleming, M.D.	Henry Bauer, Ph.D.
Mississippi	Durward L. Blakey, M.D.	R.H. Andrews, M.S.
Missouri	C.W. Meinershagen, M.D.	Elmer Spurrier, Dr.P.H.
Montana	Mary E. Soules, M.D.	David B. Lackman, Ph.D.
Nebraska	Henry D. Smith, M.D.	Henry McConnell, Dr.P.H.
Nevada	William M. Edwards, M.D.	Paul Fugazzotto, Ph.D.
New Hampshire	Walter Kaupas, M.D.	Robert A. Milner, Dr.P.H.
New Jersey	Ronald Altman, M.D.	Martin Goldfield, M.D.
New Mexico	Paul E. Pierce, M.D. (Acting)	Daniel E. Johnson, Ph.D.
New York City	Vincent F. Guinee, M.D.	Morris Schaeffer, M.D.
New York State	Alan R. Hinman, M.D.	Donald J. Dean, D.V.M.
North Carolina	Martin P. Hines, D.V.M.	Lynn G. Maddry, Ph.D.
North Dakota	Kenneth Mosser	C. Patton Steele, B.S.
Ohio	John H. Ackerman, M.D.	Charles C. Croft, Sc.D.
Oklahoma	Stanley Ferguson, Ph.D.	F.R. Hassler, M.D.
Oregon	Morris Chelsky, M.D.	Gatlin R. Brandon, M.P.H.
Pennsylvania	W.D. Schrack, Jr., M.D.	James E. Prier, Ph.D.
Puerto Rico	Rafael Correa Coronas, M.D.	Eduardo Angel, M.D.
Rhode Island	David L. Starbuck, M.D. (Acting)	Malcolm C. Hinchliffe, M.S.
South Carolina	Donald H. Robinson, M.D.	Arthur F. DiSalvo, M.D.
South Dakota	John A. Lowe, M.D.	B.E. Diamond, M.S.
Tennessee	William H. Armes, M.D.	J. Howard Barrick, Dr.P.H.
Texas	M.S. Dickerson, M.D.	J.V. Irons, Sc.D.
Utah	Taira Fukushima, M.D.	Russell S. Fraser, M.S.
Vermont	Robert B. Aiken, M.D.	Dymitry Pomar, D.V.M.
Virginia	H.E. Gillespie, M.D.	W. French Skinner, M.P.H.
Washington	Byron J. Francis, M.D.	W.R. Giedt, M.D.
West Virginia	N.H. Dyer, M.D.	J. Roy Monroe, Ph.D.
Wisconsin	H. Grant Skinner, M.D.	S.L. Inhorn, M.D.
Wyoming	Herman S. Parish, M.D.	Donald T. Lee, Dr.P.H.