National Enteric Disease Surveillance: *Salmonella* Annual Report, 2013

The Laboratory-based Enteric Disease Surveillance (LEDS) system contributes to the understanding of human salmonellosis in the United States by collecting reports of isolates from laboratory-confirmed infections[1] submitted by state public health laboratories. Reporting to LEDS is voluntary; the number of states submitting reports varies somewhat from year to year, although almost all states report every year. Occasionally, more than one isolate is reported from a single episode of infection in a person; this report includes only one isolate of a given *Salmonella* serotype per person within a 30-day period.

An overview of surveillance methods and systems for *Salmonella* infections is available at http://www.cdc.gov/nationalsurveillance/PDFs/NationalSalmSurveillOverview_508.pdf. (1)

Data in this report are current as of February 2, 2016.

Summary

- In 2013, 51 jurisdictions (50 states plus the District of Columbia) reported 45,735 cases of laboratory-confirmed *Salmonella* infections to LEDS, 7% fewer than in 2012.
- The incidence of laboratory-confirmed salmonellosis dropped to 14.5 cases per 100,000 population from 15.6 in 2012.
- Whereas many of the major serotypes decreased in incidence compared with 2012, infections caused by serotype I 4,[5],12:i:- continued to rise.
- Infants (<1 year old) had the highest incidence of infection (117.4 cases per 100,000 population for boys and 106.1 for girls).
- Incidence was highest in the Southeast.
- The largest percentage of cases were reported during the summer months.

[1]The LEDS system currently defines laboratory-confirmed *Salmonella* infections as those for which isolates were obtained from culture.

National Center for Emerging and Zoonotic Infectious Diseases
Division of Foodborne, Waterborne, and Environmental Diseases

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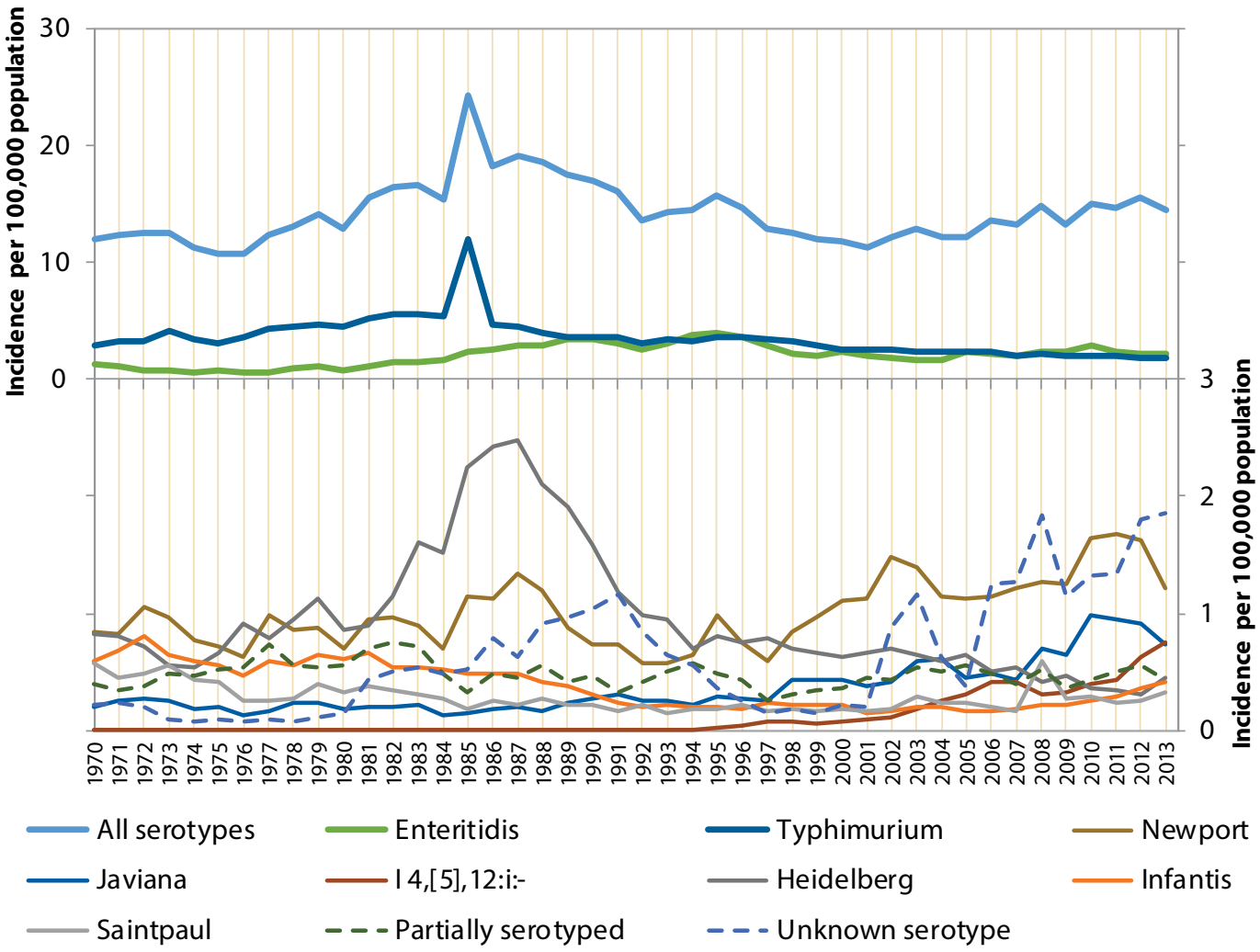
Tables, Figures, and Appendices

Figure 1. Incidence rate of laboratory-confirmed human *Salmonella* infection reported to CDC (all serotypes and individual serotypes with ≥1000 infections reported in 2013), by year, United States, 1970–2013



- Since 1970, the incidence rate of infection with all *Salmonella* has been driven largely by serotypes Typhimurium and Enteritidis.
- Since 2000, the incidence rate of infection with isolates of unknown serotype has been increasing, likely due to serotyping not being performed on these isolates.
- The peak in incidence of serotype Typhimurium infections in 1985 was due to an outbreak associated with pasteurized milk (2).

Table 1a. Laboratory-confirmed human *Salmonella* infections reported to CDC, with the 20 most frequently reported serotypes listed individually, United States, 2013

Rank	Serotype	Number reported	Percent	Incidence
1	Enteritidis	6,928	15.1	2.19
2	Typhimurium	5,853	12.8	1.85
3	Newport	3,811	8.3	1.21
4	I 4,[5],12:i:-	2,418	5.3	0.76
5	Javiana	2,304	5.0	0.73
6	Heidelberg	1,418	3.1	0.45
7	Infantis	1,342	2.9	0.42
8	Saintpaul	1,031	2.3	0.33
9	Muenchen	969	2.1	0.31
10	Montevideo	913	2.0	0.29
11	Braenderup	703	1.5	0.22
12	Oranienburg	699	1.5	0.22
13	Thompson	634	1.4	0.20
14	Mississippi	484	1.1	0.15
15	Agona	368	0.8	0.12
16	Typhi	365	0.8	0.12
17	Bareilly	354	0.8	0.11
18	Paratyphi B var. L(+) tartrate+	327	0.7	0.10
19	Poona	305	0.7	0.10
20	Berta	259	0.6	0.08
	Subtotal	**31,485**	**68.8**	
	Other serotyped*	6,788	14.8	
	Unknown serotype	5,853	12.8	
	Partially serotyped	1,388	3.0	
	Rough, mucoid, and/or nonmotile	221	0.5	
	Subtotal	**14,250**	**31.2**	
	Total	**45,735**	**100.0**	

* Listed individually in Appendix 3

Table 1b. Incidence rate of laboratory-confirmed human *Salmonella* infections reported to CDC, by age group and sex, United States, 2013 (n = 44,002 with age and sex information reported)

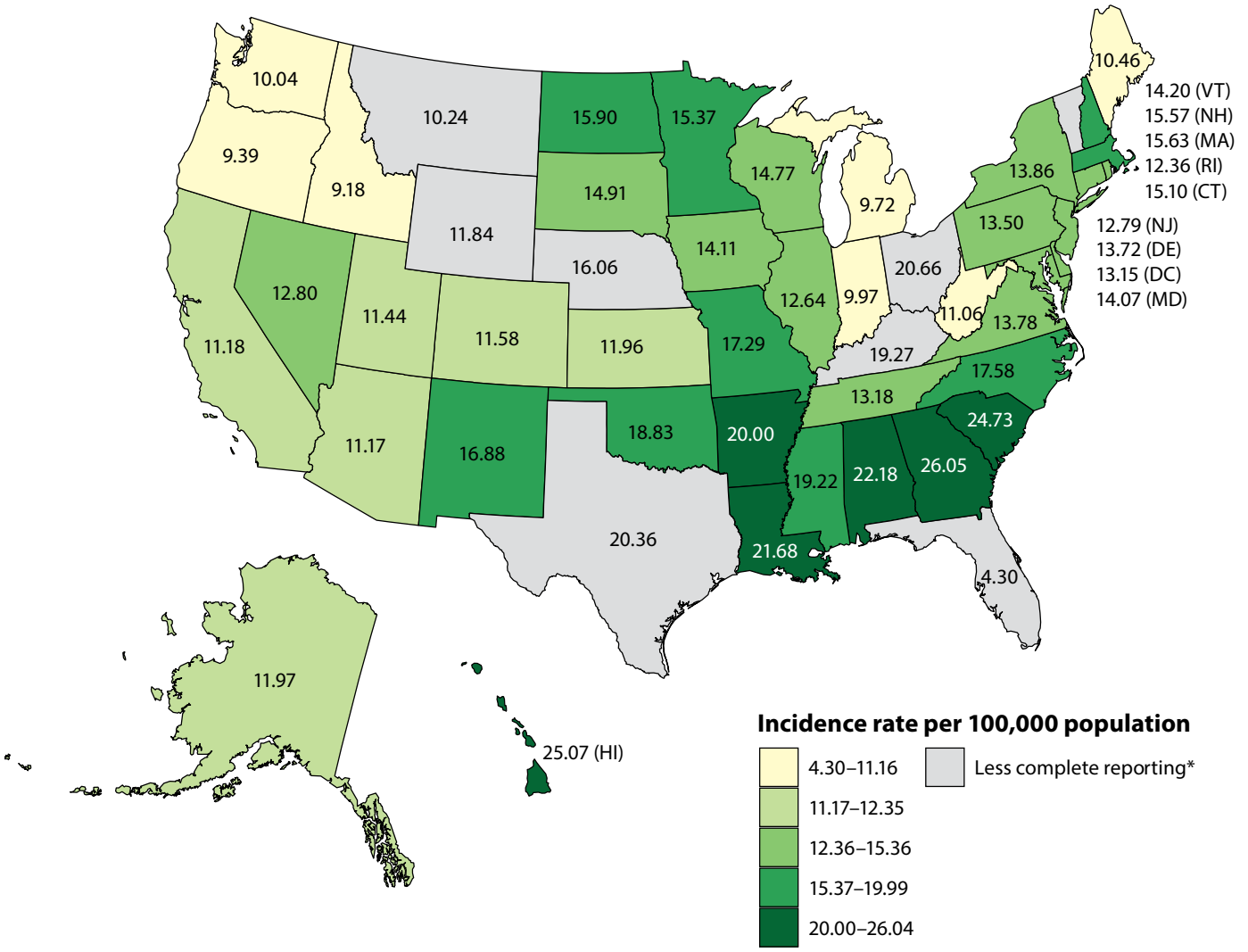
Age group, years	Incidence	
	Female	Male
< 1	106.07	117.37
1–4	39.60	42.44
5–9	16.16	17.29
10–19	9.21	10.31
20–29	11.53	8.67
30–39	10.05	8.11
40–49	10.29	8.40
50–59	11.76	9.69
60–69	13.24	11.30
70–79	16.57	14.15
≥ 80	16.33	14.51
Overall	**14.42**	**13.40**

Table 2. Percentage change among the 20 *Salmonella* serotypes most frequently reported to LEDS, comparing 2003, 2008, and 2013

Serotype	Rank			Number Reported			Percentage Change		
	2003	2008	2013	2003	2008	2013	2003 vs 2008	2008 vs 2013	2003 vs 2013
Enteritidis	2	1	1	4914	7225	6928	+ 47.0	- 4.1	+ 41.0
Typhimurium	1	2	2	6770	6524	5853	- 3.6	- 10.3	- 13.5
Newport	3	3	3	4042	3846	3811	- 4.8	- 0.9	- 5.7
I 4,[5],12:i:-	12	8	4	553	943	2418	+ 70.5	+ 156.4	+ 337.3
Javiana	5	4	5	1718	2138	2304	+ 24.4	+ 7.8	+ 34.1
Heidelberg	4	6	6	1845	1284	1418	- 30.4	+ 10.4	- 23.1
Infantis	10	12	7	570	639	1342	+ 12.1	+ 110	+ 135.4
Saintpaul	7	5	8	838	1831	1031	+ 118.5	- 43.7	+ 23.0
Muenchen	8	9	9	798	890	969	+ 11.5	+ 8.9	+ 21.4
Montevideo	6	7	10	890	1094	913	+ 22.9	- 16.5	+ 2.6
Braenderup	11	10	11	553	658	703	+ 19.0	+ 6.8	+ 27.1
Oranienburg	9	11	12	600	656	699	+ 9.3	+ 6.6	+ 16.5
Thompson	14	18	13	509	412	634	- 19.1	+ 53.9	+ 24.6
Mississippi	15	17	14	451	434	484	- 3.8	+ 11.5	+ 7.3
Agona	13	13	15	523	610	368	+ 16.6	- 39.7	- 29.6
Typhi	16	15	16	362	478	365	+ 32.0	- 23.6	+ 0.8
Bareilly	19	23	17	240	224	354	- 6.7	+ 58.0	+ 47.5
Paratyphi B var. L(+) tartrate+	17	16	18	342	477	327	+ 39.5	- 31.4	- 4.4
Poona	22	14	19	211	508	305	+ 140.8	- 40.0	+ 44.5
Berta	23	29	20	201	188	259	- 6.5	+ 37.8	+ 28.9

- In 2013, serotype I 4,[5],12:i:- had the largest increase (337%) since 2003, but this increase was due at least in part to increased recognition and changes in reporting practice (1).

Figure 2a. Incidence rate of laboratory-confirmed human *Salmonella* infection reported to CDC (all serotypes), by reporting jurisdiction, United States, 2013 (n = 45,735)



* States are shaded gray if a) the number of laboratory-confirmed human *Salmonella* isolates reported to LEDS was less than 80% of the number of salmonellosis cases reported to the National Notifiable Diseases Surveillance System (NNDSS) or b) the number of fully serotyped laboratory-confirmed human *Salmonella* isolates reported to LEDS was fewer than 80% of all *Salmonella* isolates reported to LEDS.

Figure 2b. Incidence rate of laboratory-confirmed human *Salmonella* serotype Enteritidis infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 6,928)

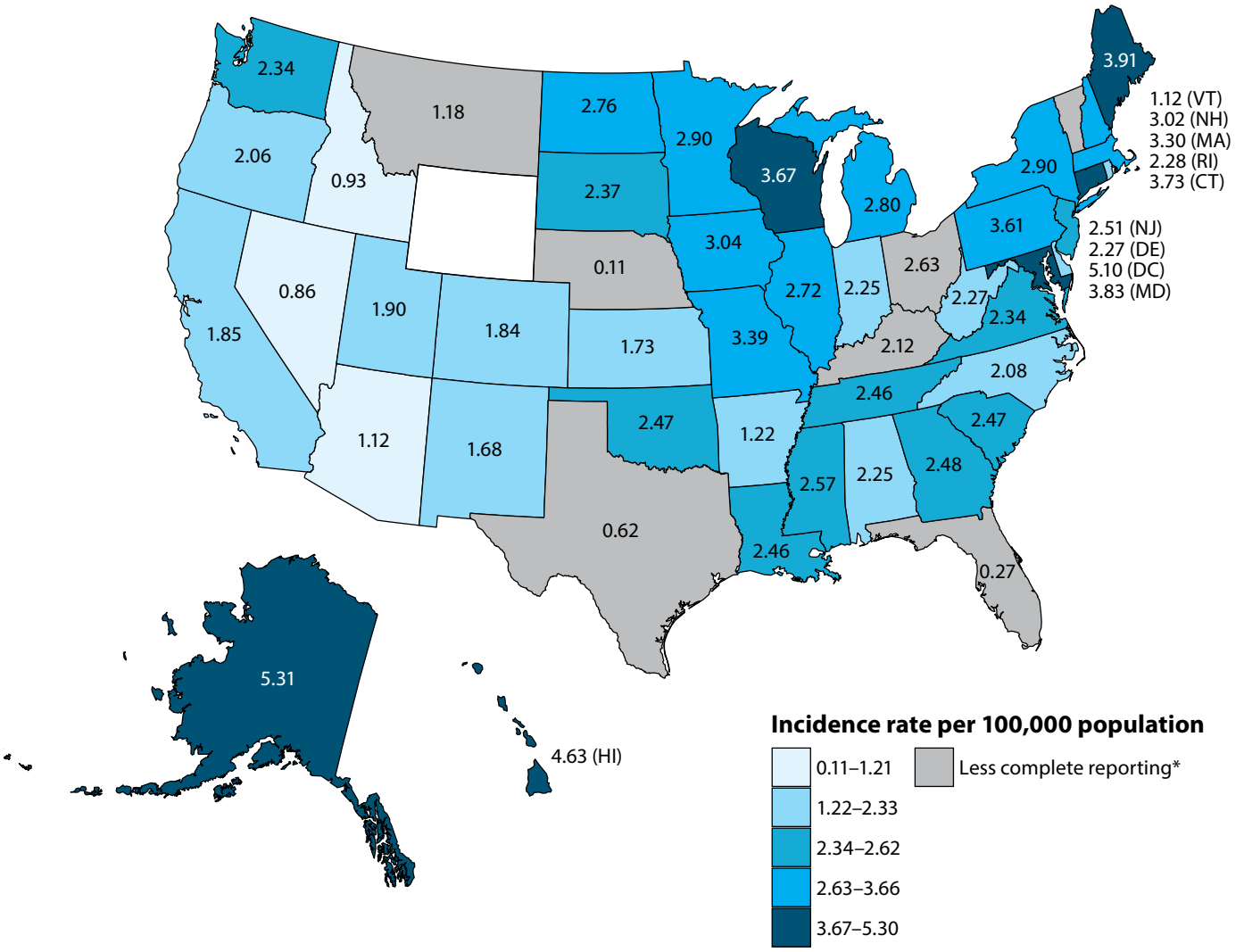


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Figure 2c. Incidence rate of laboratory-confirmed human *Salmonella* serotype Typhimurium infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 5,853)

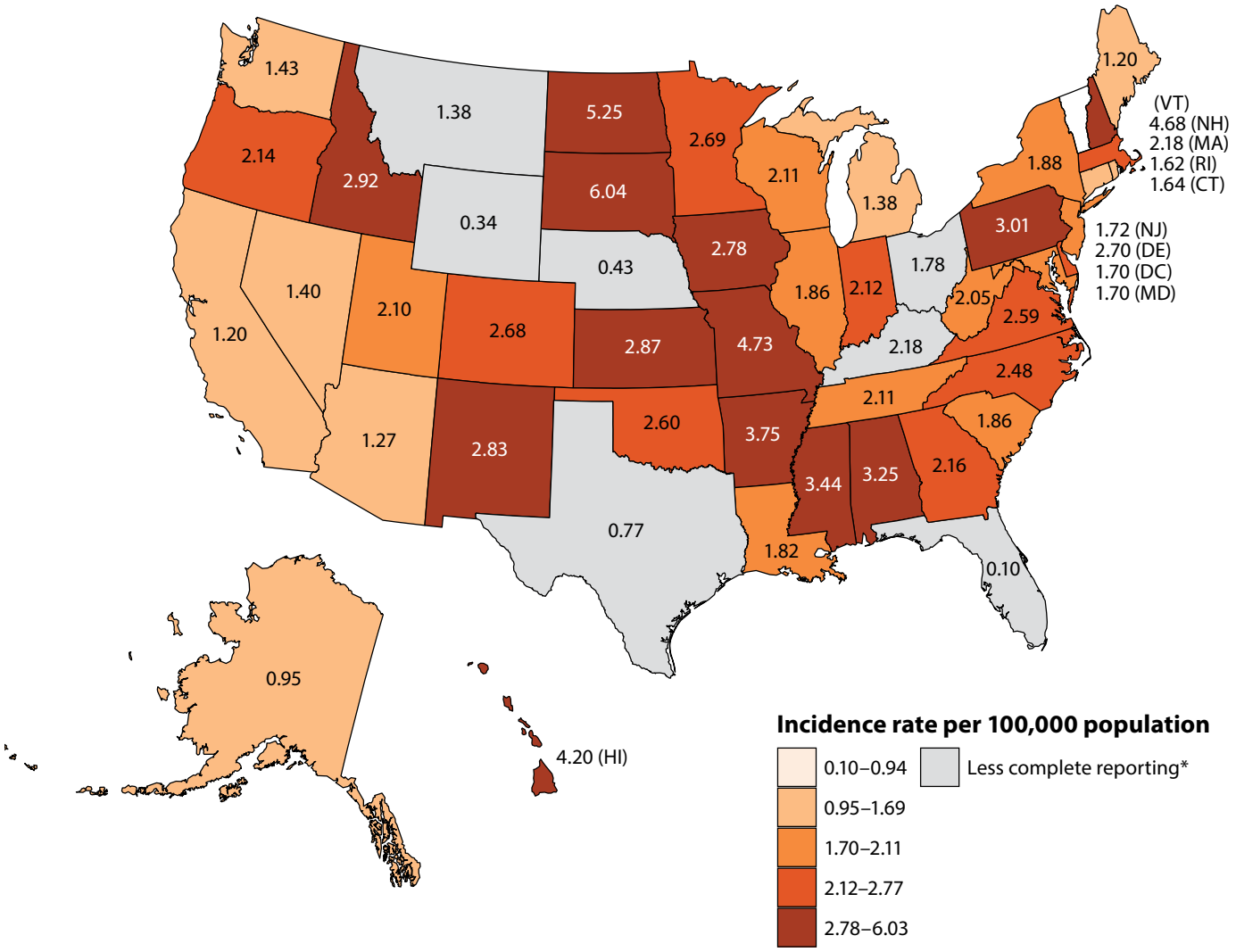

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Figure 2d. Incidence rate of laboratory-confirmed human *Salmonella* serotype Newport infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 3,811)

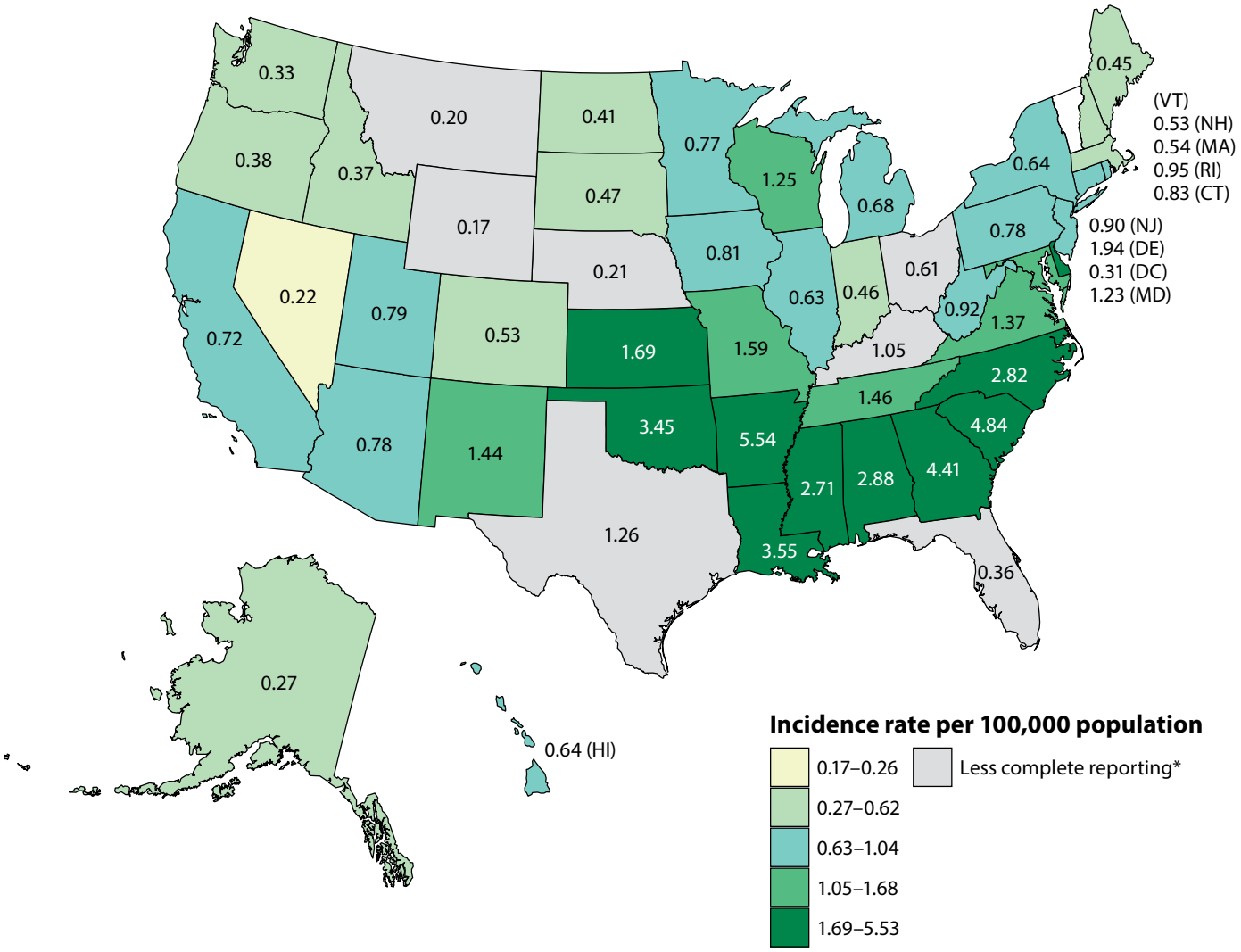

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Figure 2e. Incidence rate of laboratory-confirmed human *Salmonella* serotype I 4,[5],12:i:- infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 2,418)

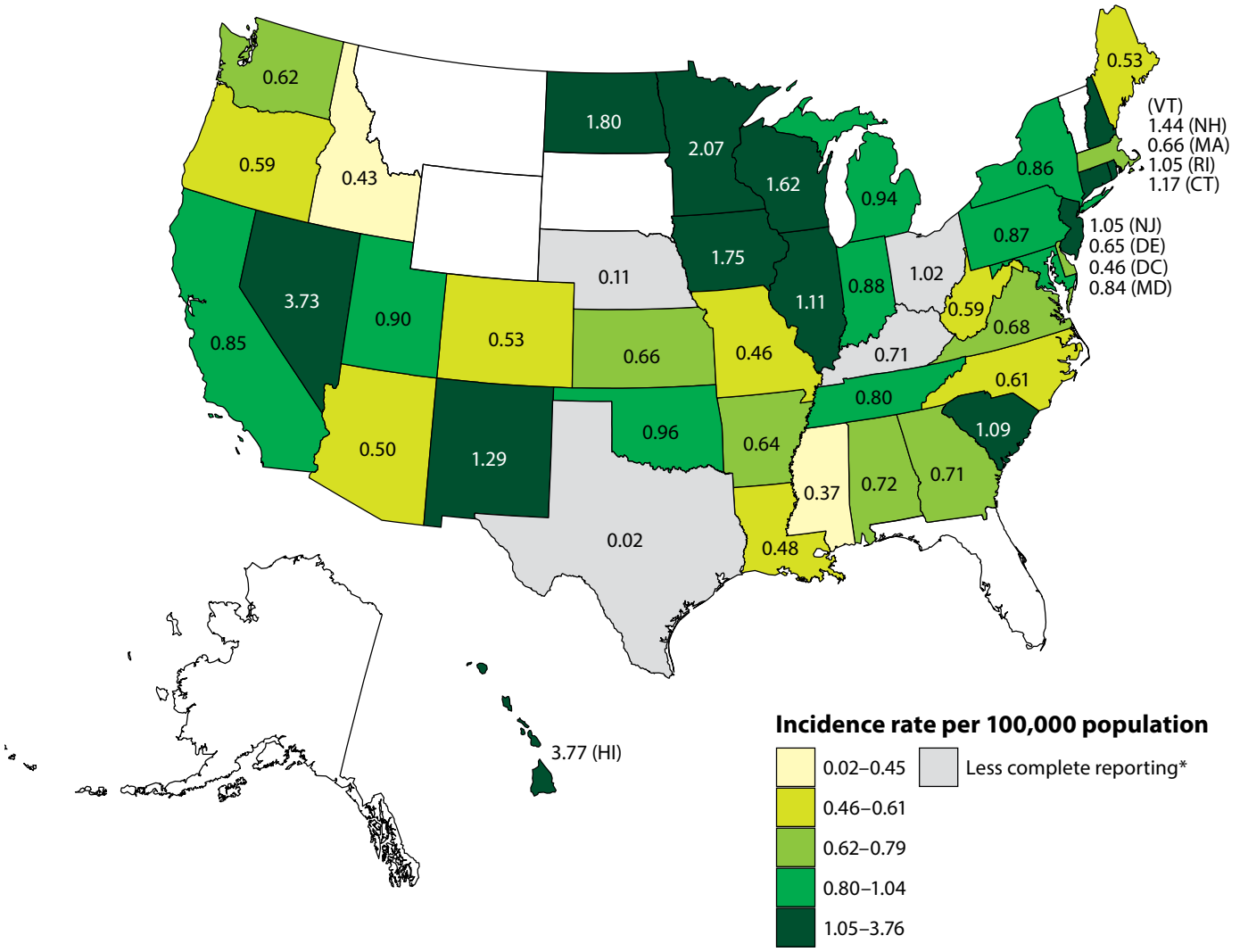

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Figure 2f. Incidence rate of laboratory-confirmed human *Salmonella* serotype Javiana infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 2,304)

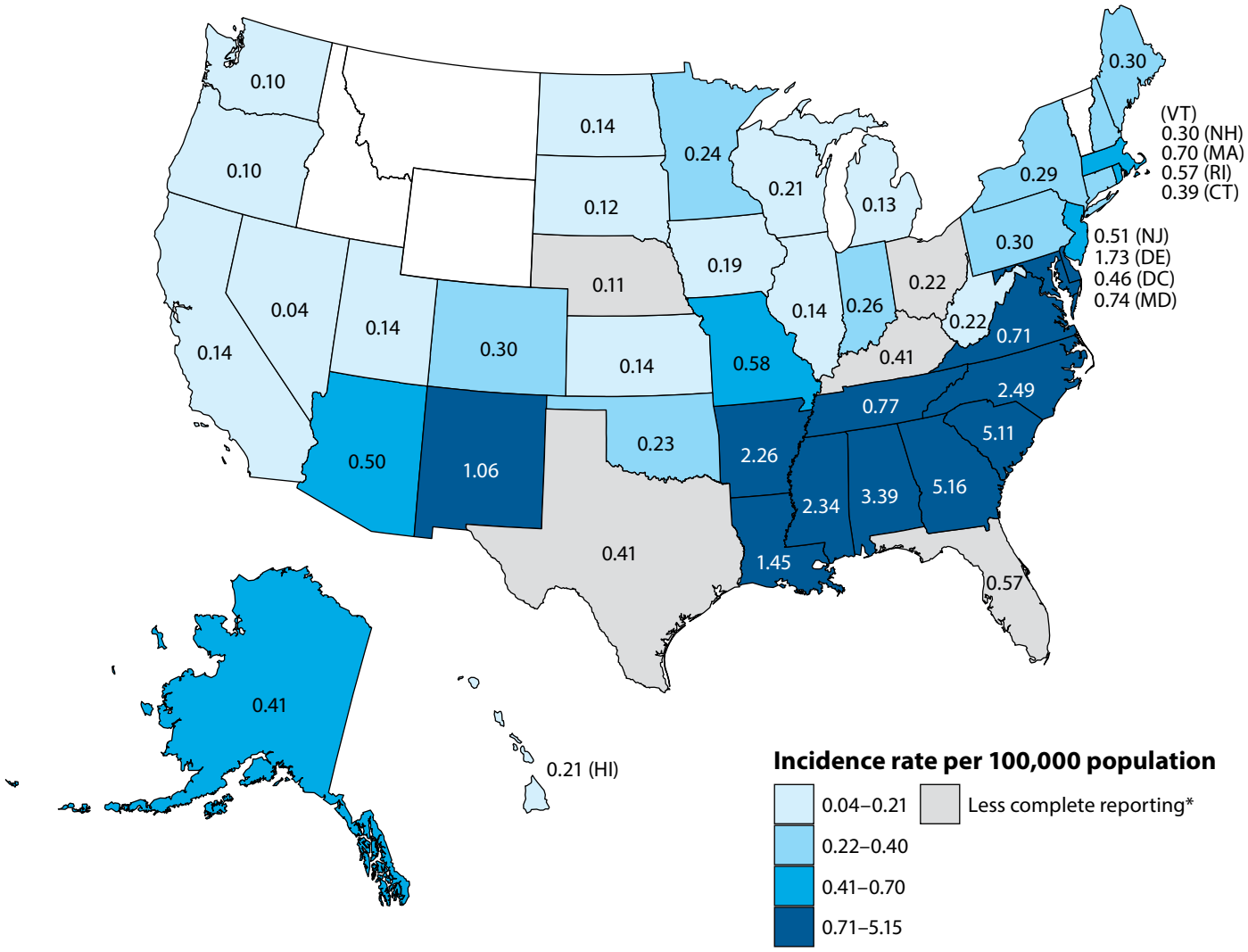

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Figure 2g. Incidence rate of laboratory-confirmed human *Salmonella* serotype Heidelberg infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 1,418)

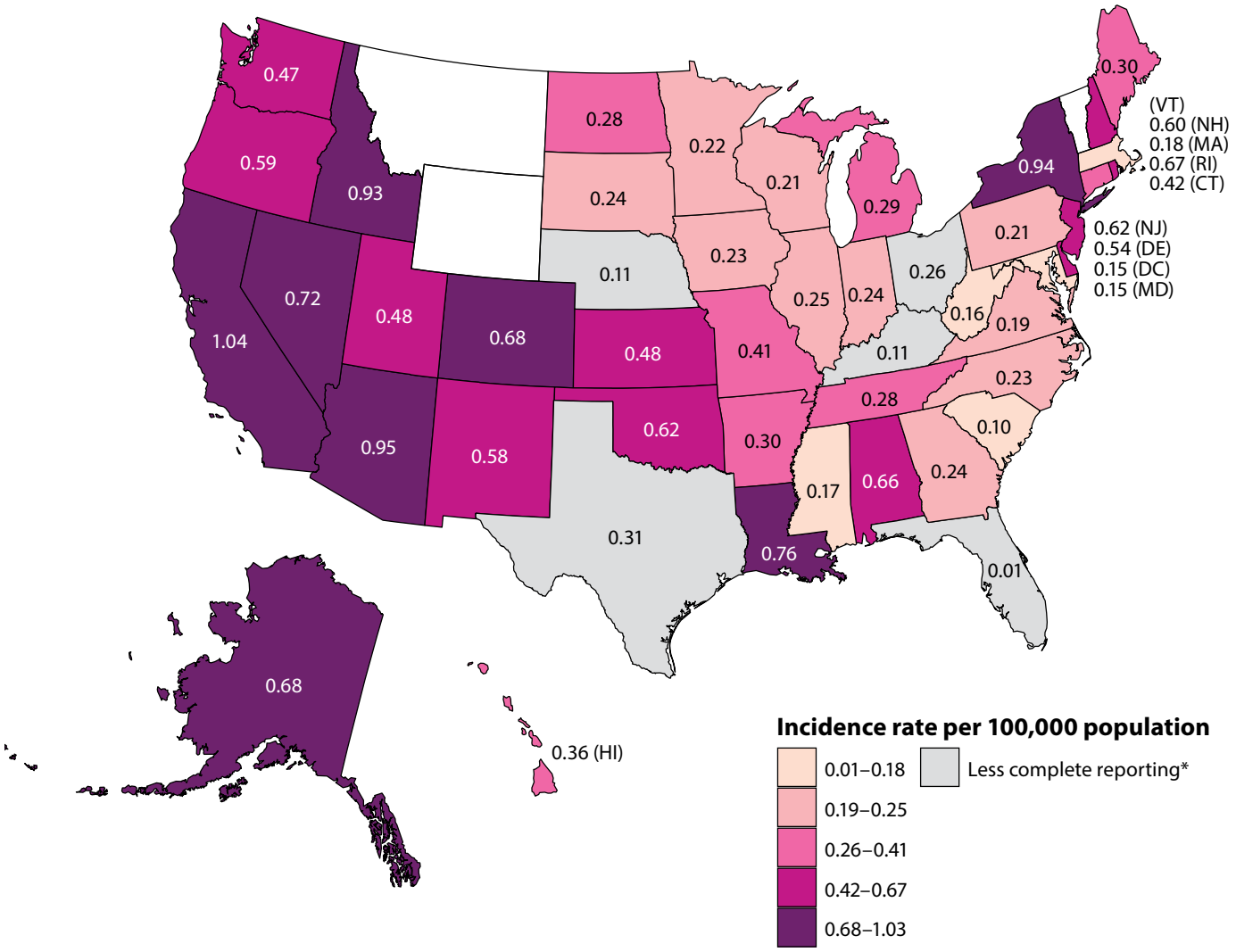

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Figure 2h. Incidence rate of laboratory-confirmed human *Salmonella* serotype Infantis infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 1,342)

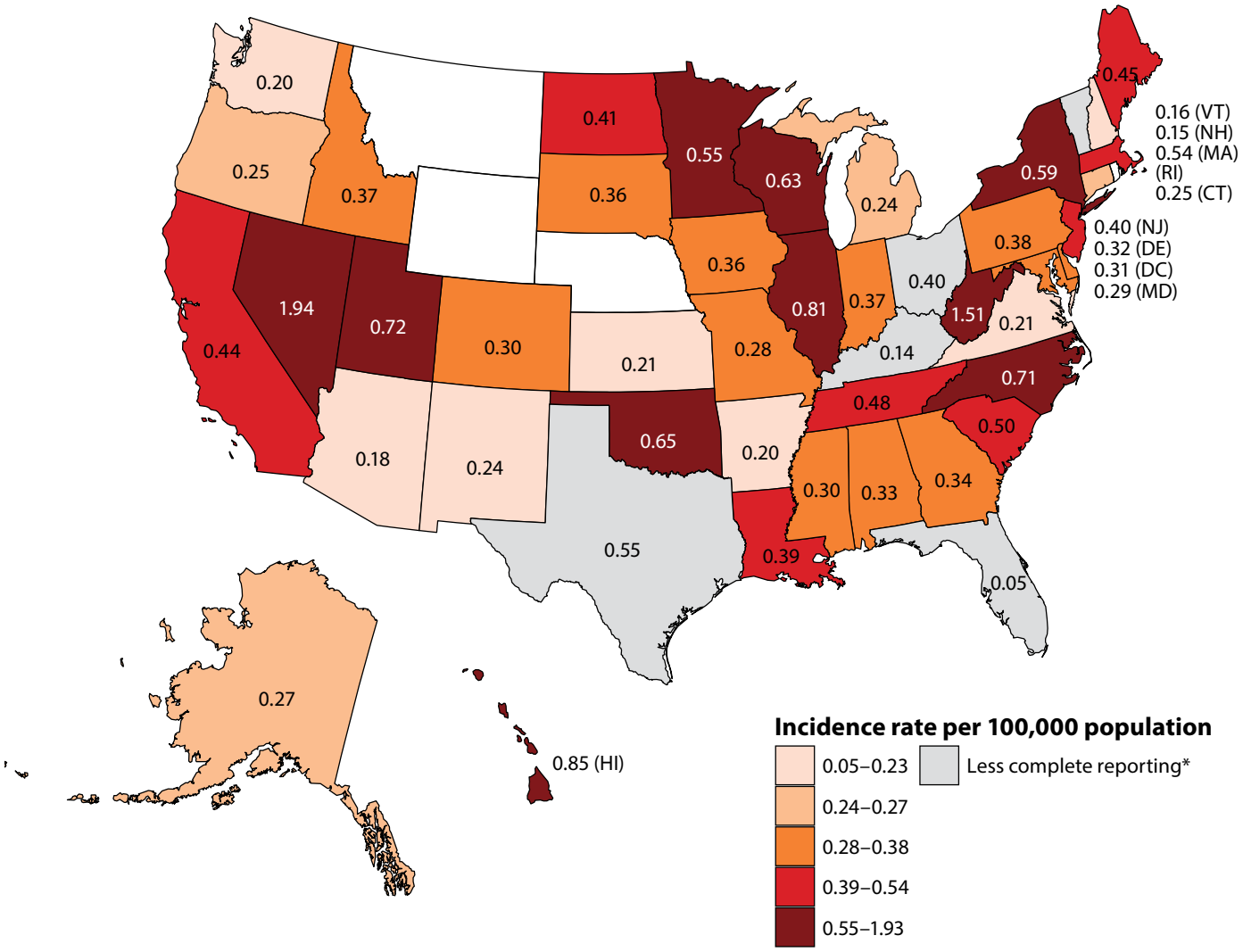

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Figure 2i. Incidence rate of laboratory-confirmed human *Salmonella* serotype Saintpaul infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 1,031)

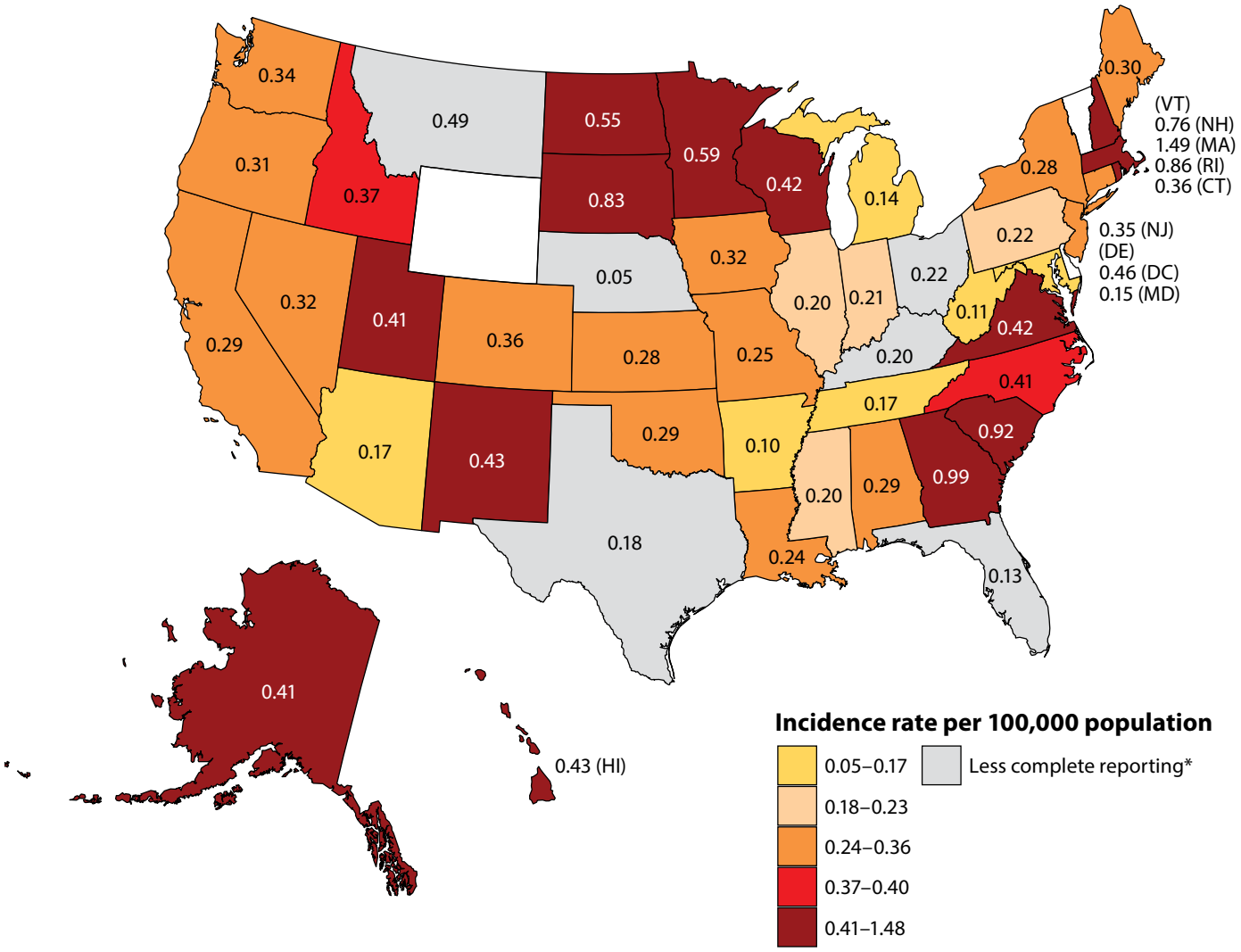

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Figure 2j. Incidence rate of laboratory-confirmed human *Salmonella* serotype Muenchen infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 969)

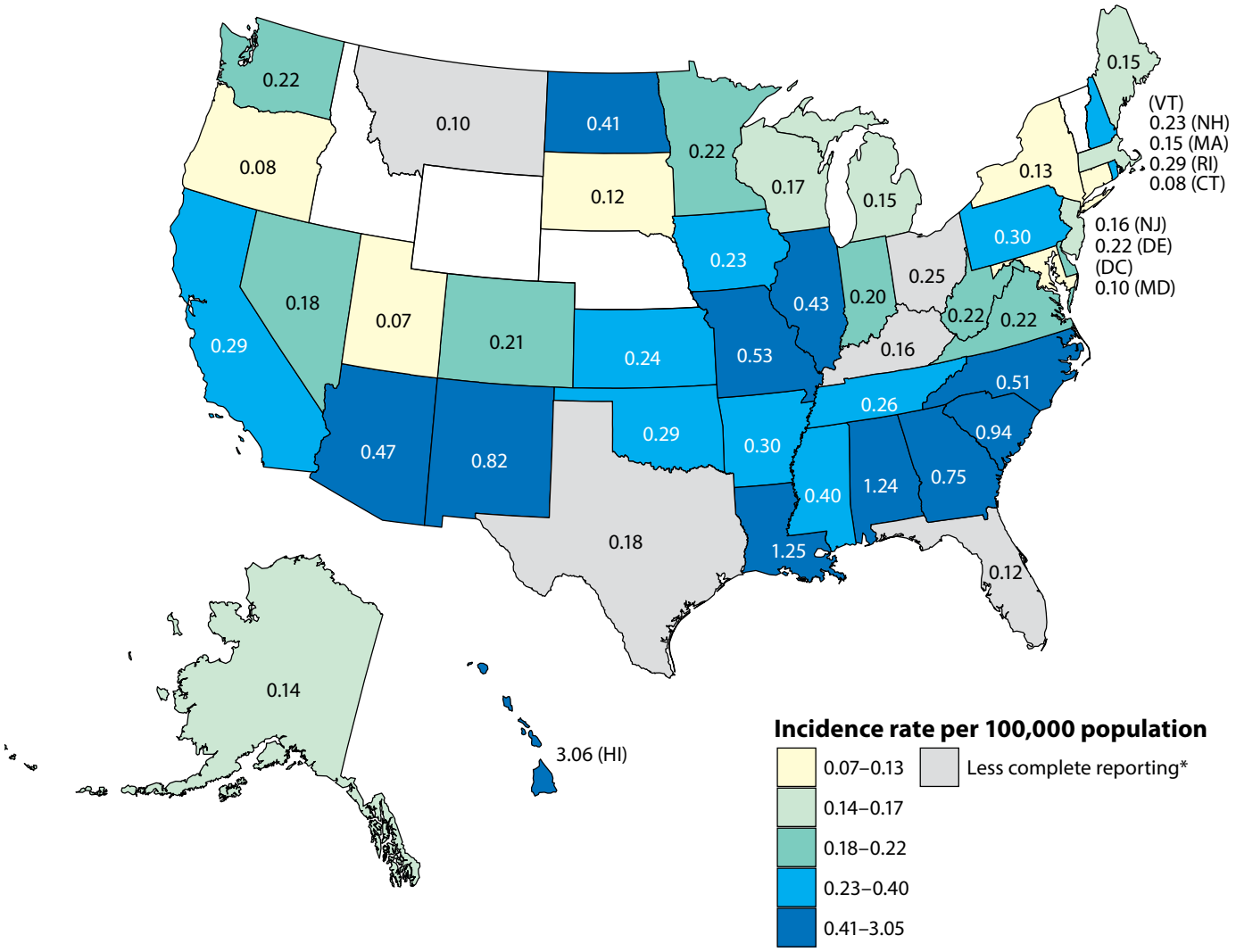

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Figure 2k. Incidence rate of laboratory-confirmed human *Salmonella* serotype Montevideo infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 913)

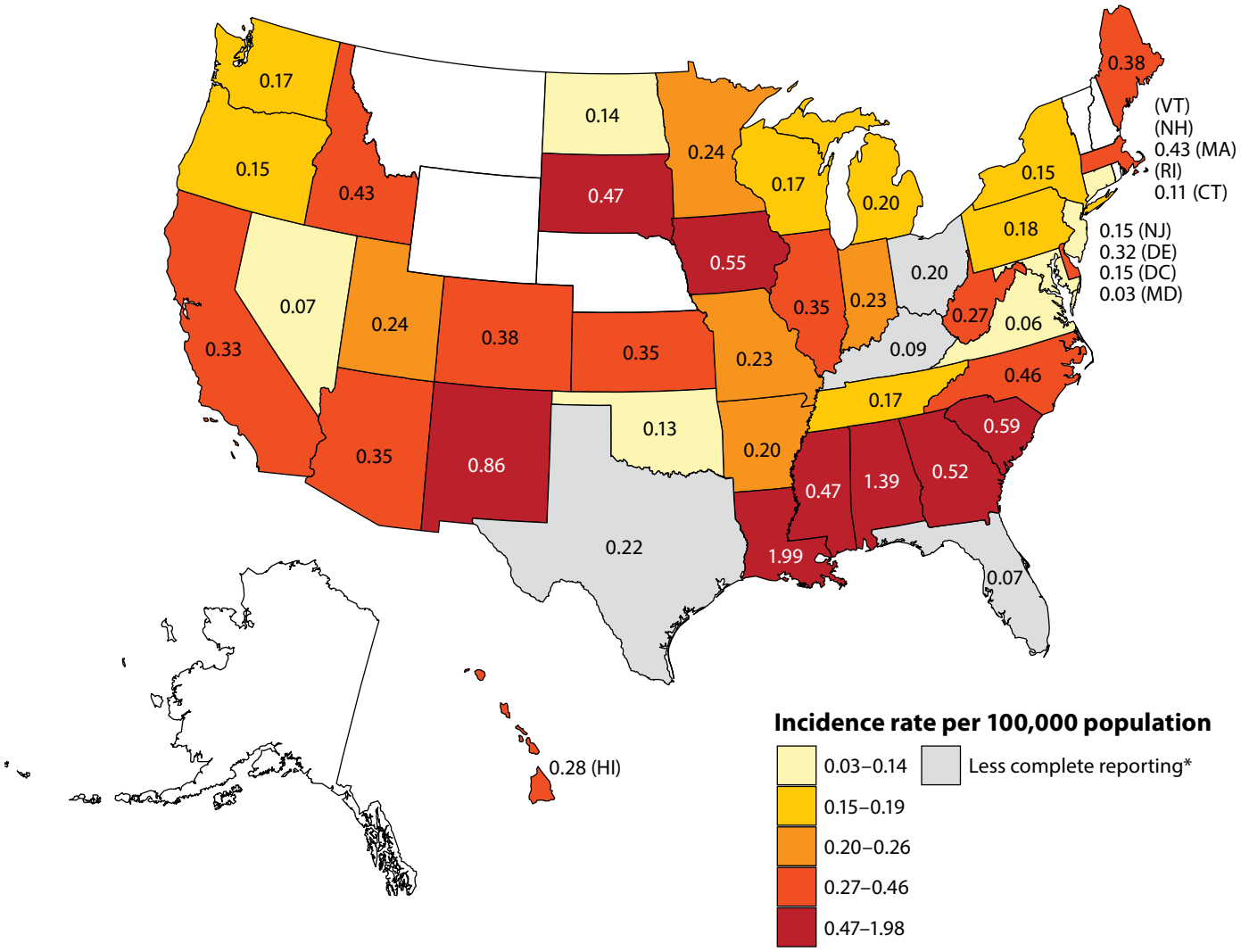

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Figure 2l. Incidence rate of laboratory-confirmed human *Salmonella* serotype Braenderup infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 703)

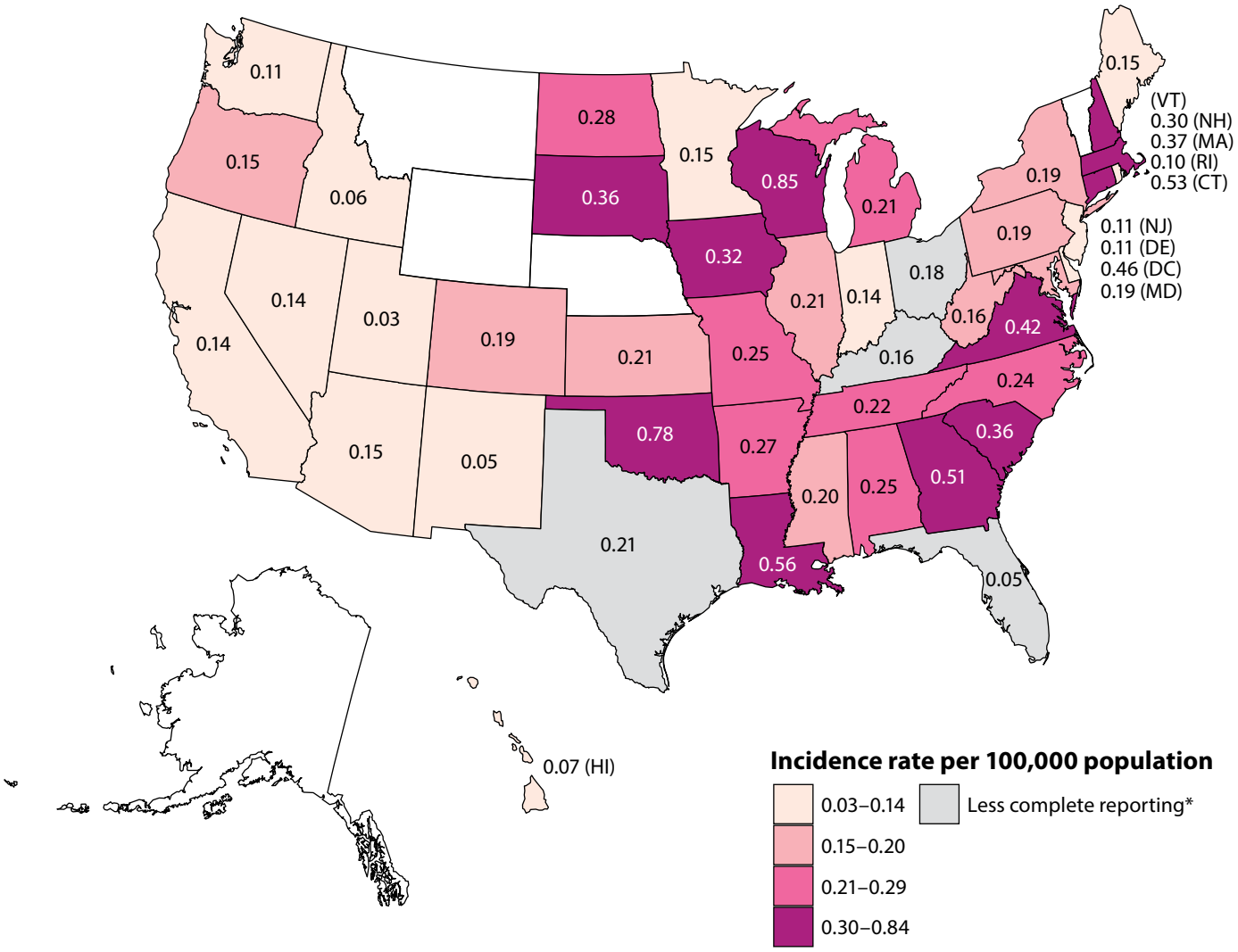

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Figure 2m. Incidence rate of laboratory-confirmed human *Salmonella* serotype Oranienburg infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 699)

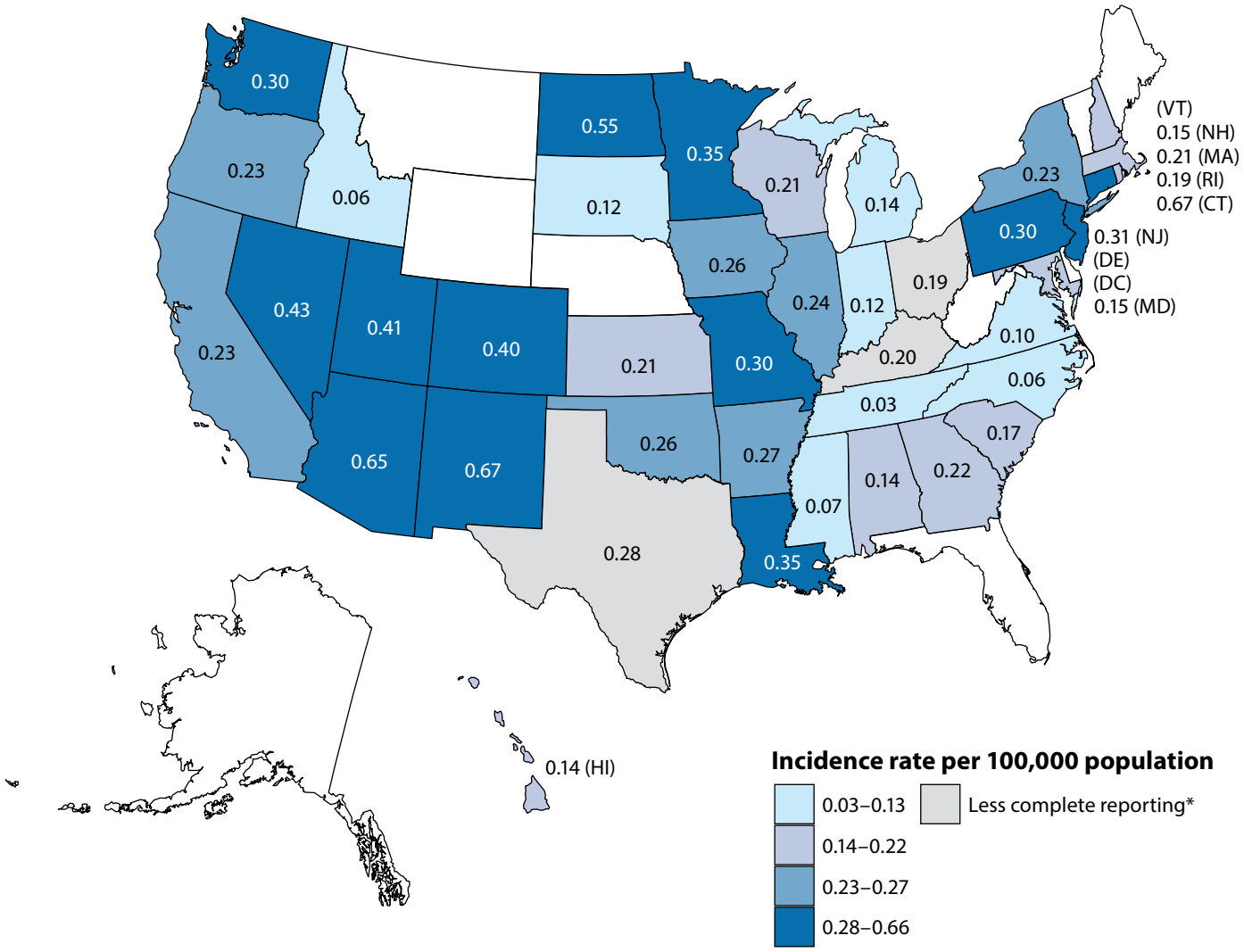

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Figure 2n. Incidence rate of laboratory-confirmed human *Salmonella* serotype Thompson infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 634)

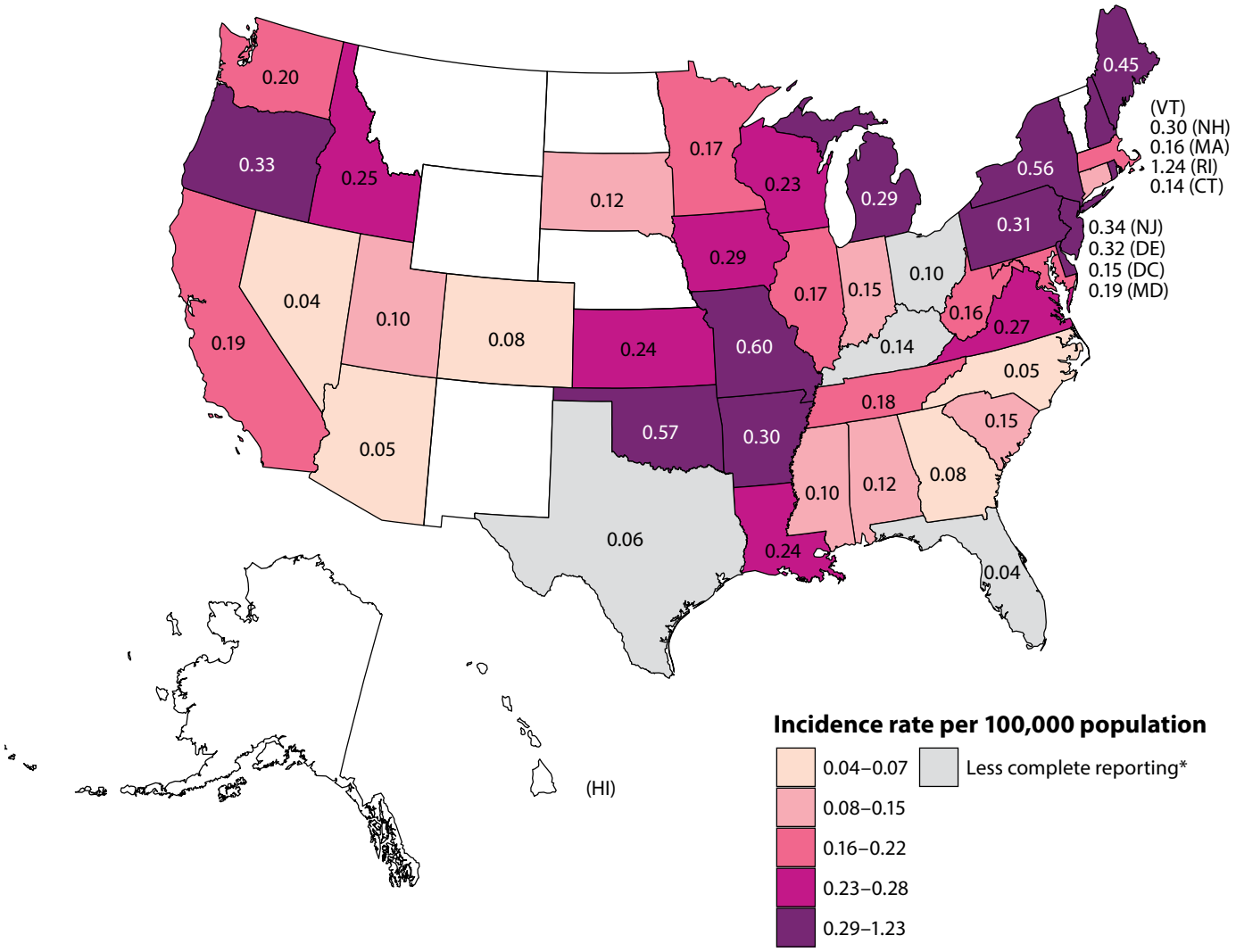

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Figure 2o. Incidence rate of laboratory-confirmed human *Salmonella* serotype Mississippi infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 484)

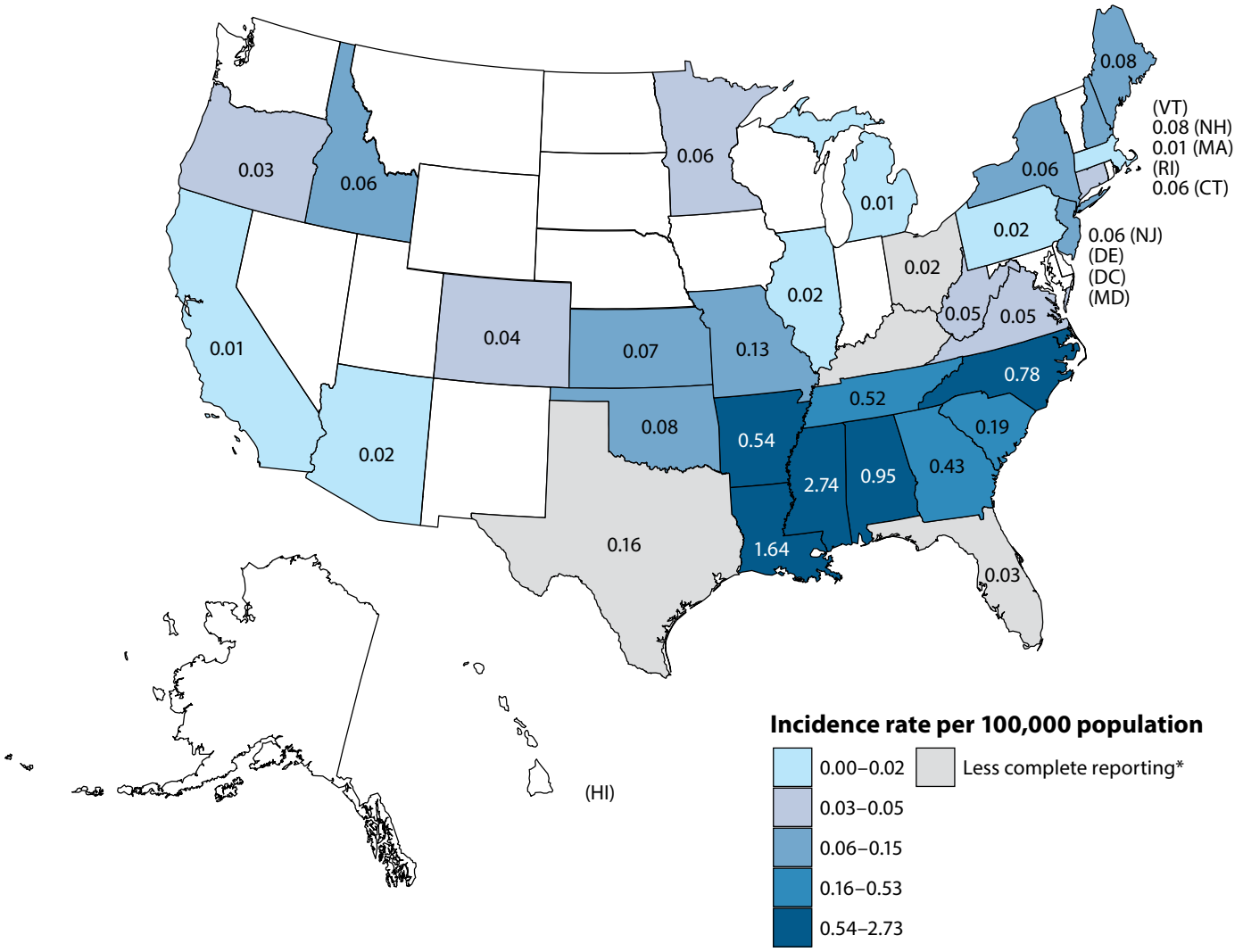

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Figure 2p. Incidence rate of laboratory-confirmed human *Salmonella* serotype Agona infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 368)

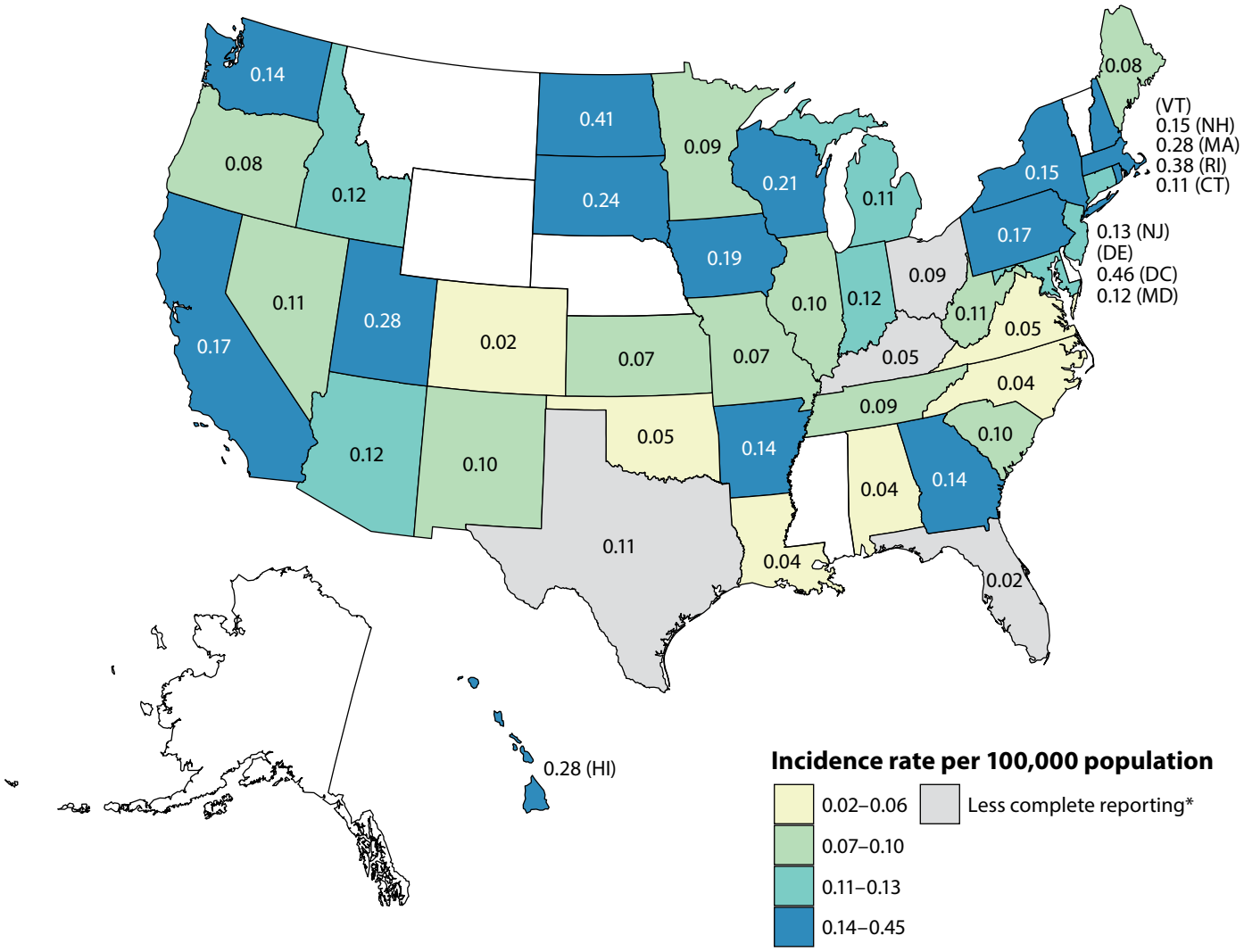

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Figure 2q. Incidence rate of laboratory-confirmed human *Salmonella* serotype Typhi infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 365)

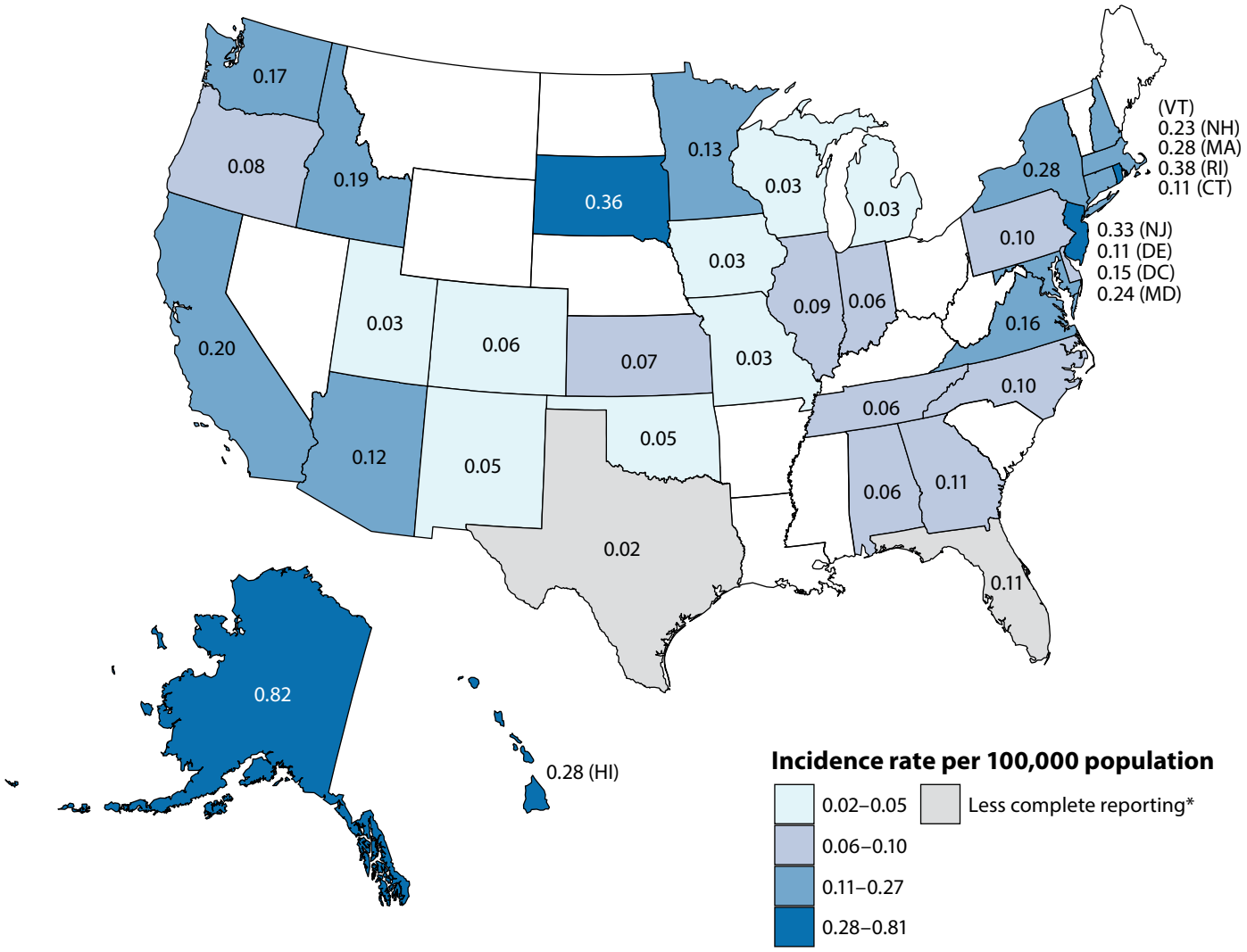

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Figure 2r. Incidence rate of laboratory-confirmed human *Salmonella* serotype Bareilly infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 354)

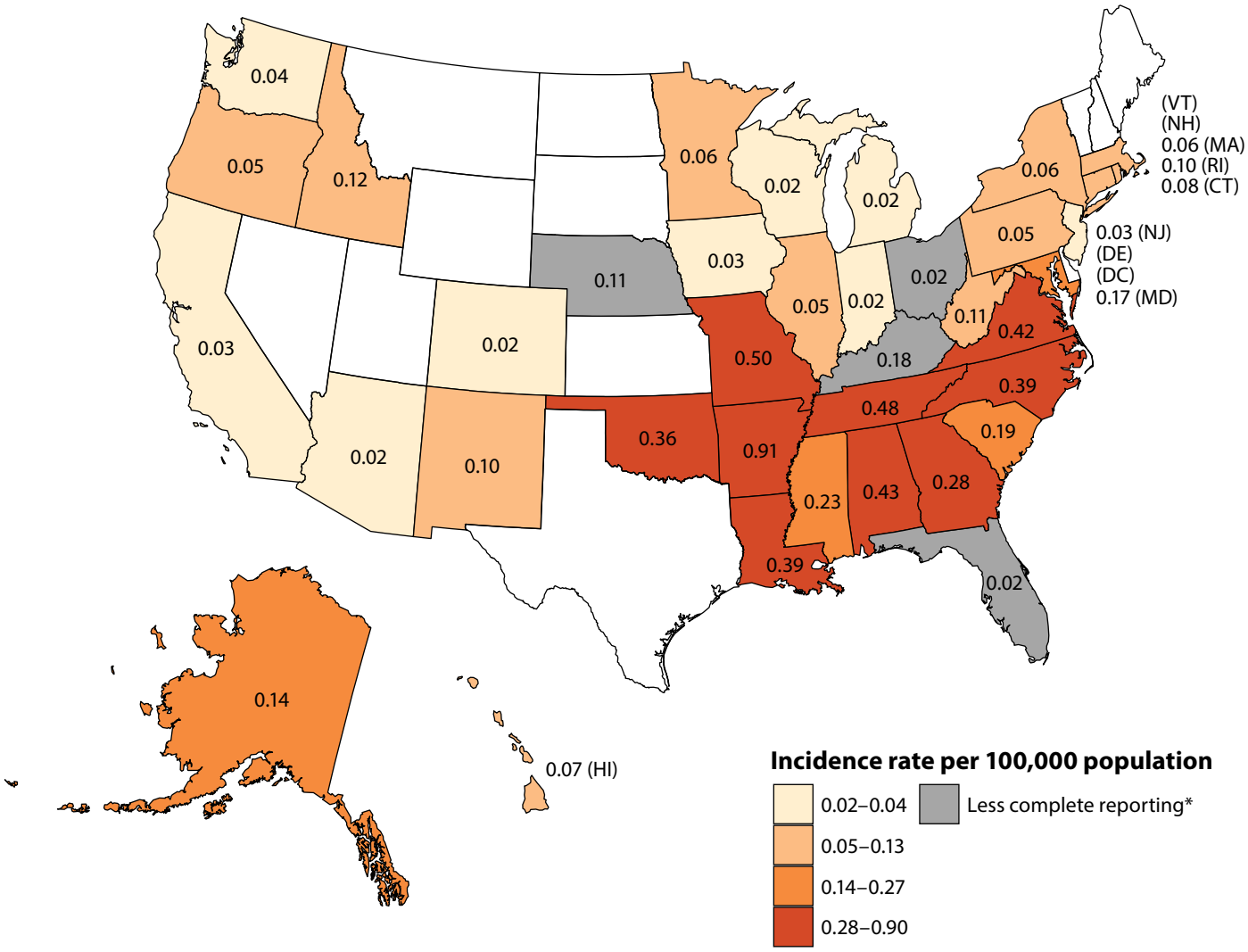

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Figure 2s. Incidence rate of laboratory-confirmed human *Salmonella* serotype Paratyphi B var. L(+) tartrate + infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 327)

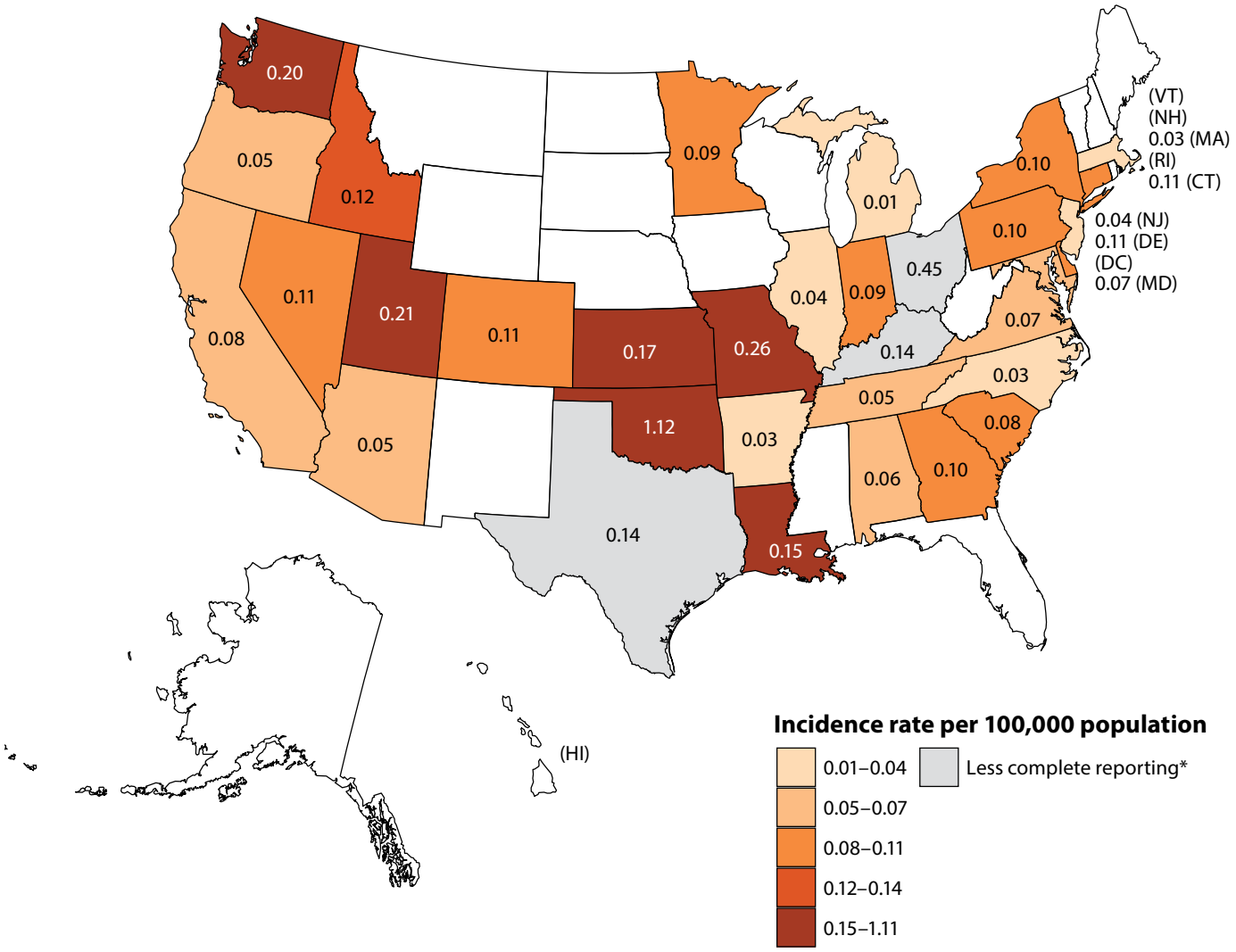

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Figure 2t. Incidence rate of laboratory-confirmed human *Salmonella* serotype Poona infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 305)

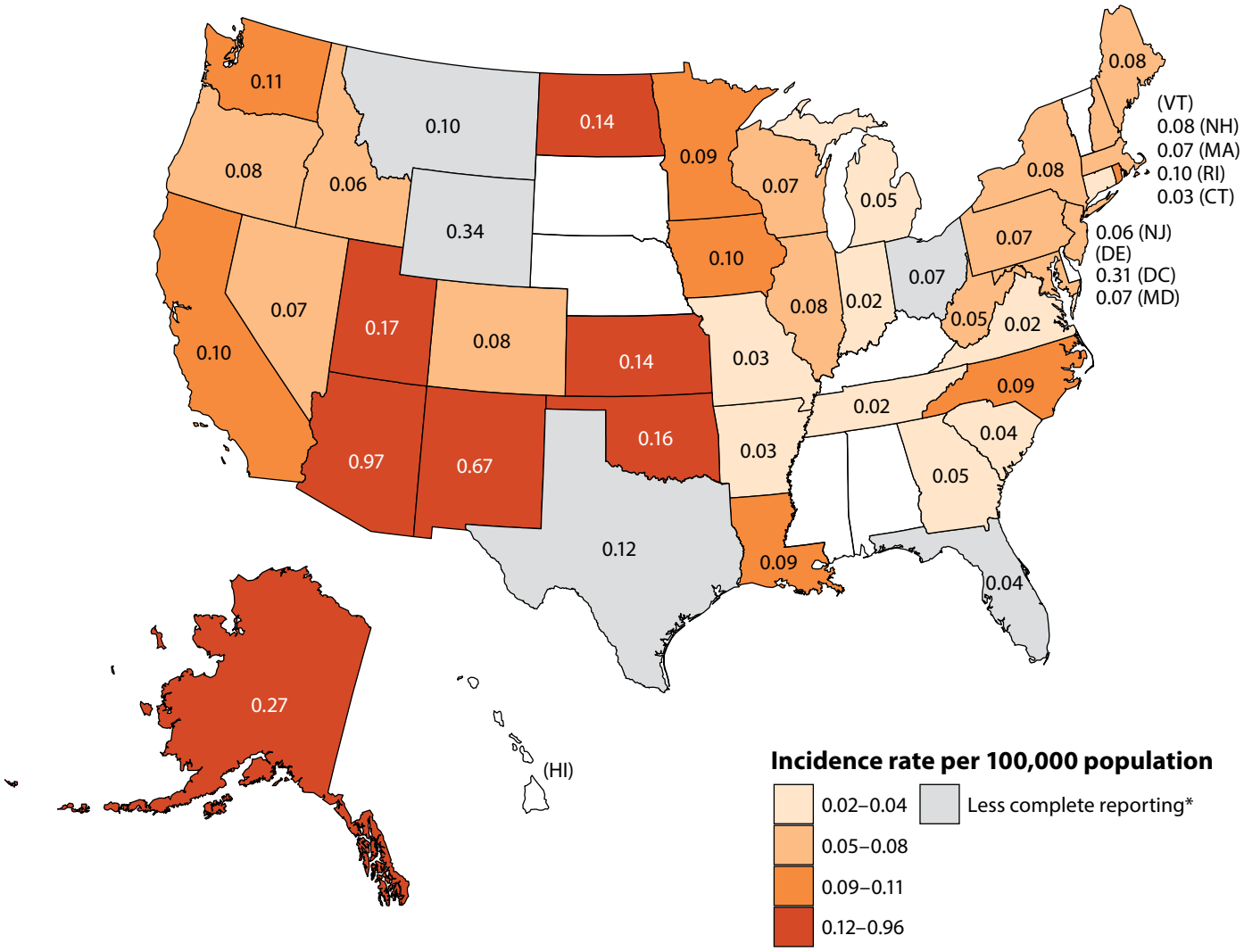

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Figure 2u. Incidence rate of laboratory-confirmed human *Salmonella* serotype Berta infection reported to CDC, by reporting jurisdiction, United States, 2013 (n = 259)

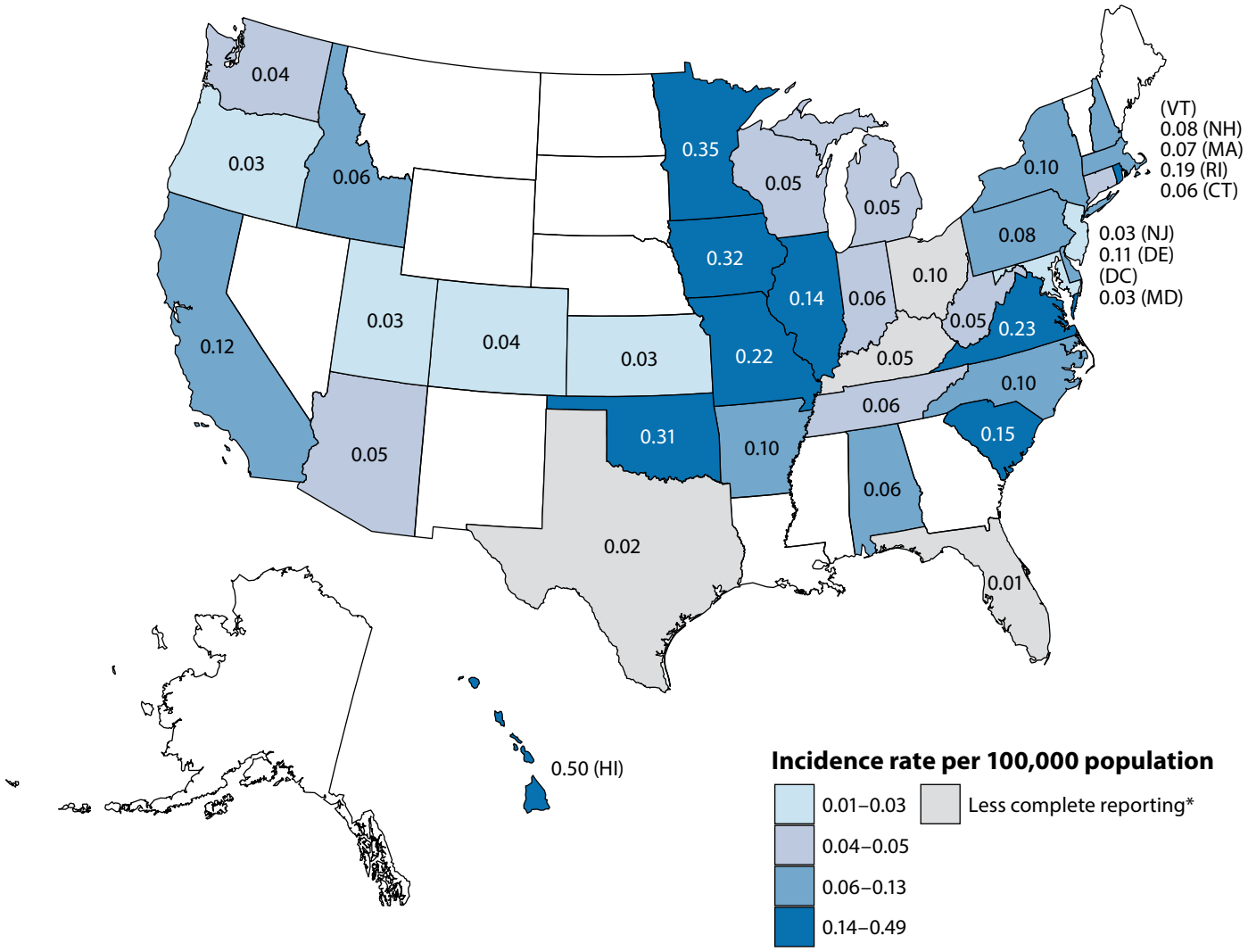

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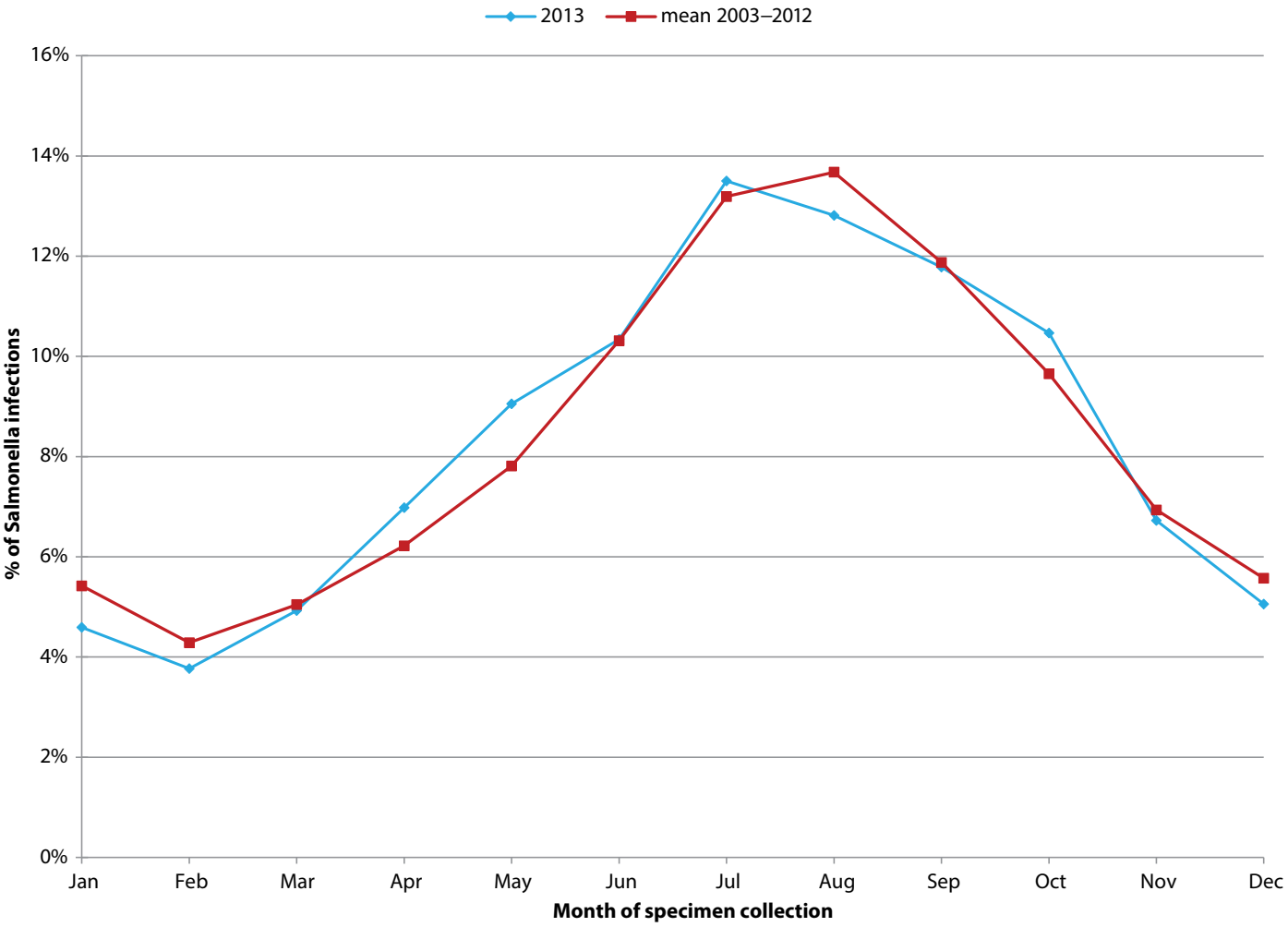
Figure 3. Percentage of laboratory-confirmed *Salmonella* infections reported to CDC, by month of specimen collection, United States, 2013 and mean percentage during 2003 to 2012



National Enteric Disease Surveillance: *Salmonella* Annual Report Appendices, 2013[2]

Appendices

[2] In mid-2012, the USDA Food Safety and Inspection Service (USDA-FSIS) began molecular serotyping, which resulted in few *Salmonella* isolates being sent to the National Veterinary Services Laboratories (NVSL) of USDA's Animal and Plant Health Inspection Service (APHIS) for traditional serotyping; those results are therefore no longer included as Appendices to this report. USDA-FSIS publishes serotypes of *Salmonella* isolated from carcasses and meat and poultry products on its website (http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/microbiology/annual-serotyping-reports).

Appendix 1. Laboratory-confirmed *Salmonella* infections reported to CDC by age group and sex, 2013

	Sex			
Age Group	**Female**	**Male**	**Unknown**	**Total**
< 1	2043	2368	143	4554
1–4	3085	3453	150	6688
5–9	1626	1817	76	3519
10–19	1879	2207	84	4170
20–29	2507	1963	105	4575
30–39	2051	1659	88	3798
40–49	2181	1752	115	4048
50–59	2634	2070	133	4837
60–69	2270	1761	98	4129
70–79	1659	1171	71	2901
≥ 80	1208	640	47	1895
Unknown	190	212	219	621
All age groups	**23333**	**21073**	**1329**	**45735**

Appendix 2a. Laboratory-confirmed *Salmonella* infections reported to CDC by serotype and reporting jurisdiction, 2013 (Alaska to Kansas[1])

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Abaetetuba											2						
Aberdeen												1		1	1		
Abony	2					2						1					
Adelaide		2		1	45		2			1	4	6			13	4	
Adjame																	
Agama					1												
Agbeni	1				1	1	1								7	7	
Ago					3												
Agona		3	4	8	67	1	4	3		2	13	4	6	2	13	8	2
Agoueve																	
Alabama		1									1						
Alachua					1	1				1	1						
Albany		1			3	1	1				1				2		
Albert					1	1											
Albuquerque																	1
Altona				2	1												
Amager					1							1					
Amsterdam		1															
Anatum		1	3	15	61	2	1			4	9	3	2		21	4	4
Anecho																	
Anfo					1												
Apapa				1													1
Apeyeme					1						3						
Aqua																	
Arechavaleta																	
Bahrenfeld																	
Baildon				1						9	4						
Bareilly	1	23	27	1	12	1	3			4	28	1	1	2	6	1	
Barranquilla																1	
Beaudesert																	
Belem						1											
Benin					1												
Bere																	
Berta		3	4	3	45	2	2		1	1		7	10	1	18	4	1
Birkenhead												1					
Blijdorp																	
Blockley				1	1		2				1						
Bonariensis													1				
Bovismorbificans					5	1						1	6		4	4	2
Braenderup		18	8	10	54	10	19	3	1	7	48		10	1	27	10	4

[1]The key to state name abbreviations can be found at http://www.census.gov/geo/reference/ansi_statetables.html.

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Brandenburg			2	4	6	2	3	1		1	13	3			3	2	
Brazil		1															
Bredeney		7			5	2					1				1	4	
Buzu																	
Canada		1			1												
Cannstatt				1		1											
Caracas																	
Carmel											2						
Carrau					1					3	3						1
Cerro				1	16	3	2				2					2	
Chailey		1			9										2		
Chandans																	
Chester				1	9			2			3						
Chichiri																1	
Choleraesuis											1			1			
Choleraesuis var. Decatur																	
Choleraesuis var. Kunzendorf					2										1		
Clackamas																	
Coeln																	
Colindale	1										1						
Concord																	
Corvallis					3						1	1			1		
Cotham					12										3	2	2
Cubana				1													
Cuckmere																	
Dahra																	
Daytona		3															
Denver				3											2		
Derby		4		1	5			2	1		3	5	2		7	1	2
Detmold																	
Dublin		2	1	9	36	5				5	3	1			2	2	2
Duisburg			3		4												
Durban				1	1						1	1			1		
Durham											1						
Ealing																	
Eastbourne					1										2		
Enteritidis	40	128	41	75	713	96	131	31	18	52	239	69	94	15	347	149	40
Eppendorf																	
Erfurt																	
Falkensee																	
Fann																	
Farmsen																	

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Florida										3							
Fluntern																1	
Freetown										1							
Fresno											2						
Galiema																	
Gaminara		5		4		2				10	3					1	
Gatuni																	
Gera																	
Give		3	2	4	7	1				1	1	3			1	1	
Glidji																	
Godesberg																	
Goettingen				1													
Guinea		1			1						1						
Hadar				3	20	6	5			2	1		1	1	12	1	
Hartford		5	3		3		1			11	12		8		12	5	
Hatfield																	
Hato						1											
Havana				2	3	1								1	2		
Heidelberg	5	33	9	65	399	36	14	1	5	2	23	5	6	15	33	17	13
Herston					1										1		
Holcomb																	
Horsham																	
Hull					2												
Hvittingfoss		3			10					3	2	1			2		
I 11:r:-																	
I 13,22:z:-																	
I 13,23:-:1,5							1									1	
I 13,23:b:-		2									108		1		1		
I 16:d:-													1				
I 3,10:-:1,5															1		
I 3,10:e,h:-							1										
I 3,10:l,v:-					1		3										
I 3,10:l,z13:-							1										
I 30:b:-																	
I 38:k:-		1									2						
I 4,[5],12:-:1,2					3												2
I 4,[5],12:-:1,7																	
I 4,[5],12:b:-		7	1	1	55	3					7		8	2	12	11	
I 4,[5],12:d:-						1	3										
I 4,[5],12:e,h:-		1					1										
I 4,[5],12:i:-		36	19	34	326	27	42	2	6		69	53	54	7	139	60	17
I 4,[5],12:l,v:-																	
I 4,[5],12:r:-					1		5								1		

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
I 41:z4,z23:-																	
I 45:b:-															1		
I 6,7:-:1,2																	
I 6,7:-:1,5		1	2	1	1		5						1		10		1
I 6,7:-:e,n,z15							5										
I 6,7:b:-																	
I 6,7:c:-					2												
I 6,7:d:-																	
I 6,7:e,h:-							12										
I 6,7:i:-																	
I 6,7:k:-					2		2										
I 6,7:l,w:-																	
I 6,7:r:-					1		1								2		1
I 6,7:y:-																	
I 6,7:z10:-																	
I 6,8:-:1,2		1					2						1				
I 6,8:-:1,5											1						
I 6,8:-:e,n,x							1										
I 6,8:-:e,n,z15																	
I 6,8:d:-					2		2								2		
I 6,8:e,h:-					3		7										
I 6,8:i:-																	
I 6,8:l,v:-																	
I 6,8:r:-																	
I 6,8:y:-																	
I 6,8:z10:-							2										
I 8,20:i:-							1										
I 9,12:-:1,5		1					1				1				1		
I 9,12:-:1,6							1										
I 9,12:a:-																	
I 9,12:e,h:-																	
I 9,12:g,z51:-																	
I 9,12:i,z28:-																	
I 9,12:l,v:-																	
I 9,12:l,z28:-		8	5				3				5				1		
II 13,22:z:-																	
II 16:g,[m],[s],t:[1,5]					1												
II 16:m,t:-																	
II 17:g,t:[e,n,x,z15]					1												
II 21:z10:[z6]				1													
II 3,10:l,z28:1,5								1									
II 30:l,z28:z6																	
II 40:b:-																	

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
II 47:b:1,5			1														
II 47:b:e,n,x,z15																	
II 48:a:z6				1													
II 50:b:z6																	
II 58:c:z6																	
II 58:l,z13,z28:z6															2		
II 9,12:l,w:e,n,x					1												
IIIa 13,22:z4,z23:-					1												
IIIa 13,23:g,z51:-											1						
IIIa 18:z4,z23:-					1												
IIIa 21:g,z51:-																	
IIIa 35:g,z51:-					1												
IIIa 35:z29:-				1													
IIIa 40:g,z51:-																	
IIIa 40:z36:-																	
IIIa 40:z4,z23:-																	
IIIa 41:z4,z23:-					2	1									1	1	1
IIIa 41:z4,z32:-			1														
IIIa 42:z4,z23:-					1												
IIIa 42;g,z51:-																	
IIIa 44:z4,z24:-					1												
IIIa 48:g,z51:-		2									4			1			
IIIa 48:z4,z23:-																	
IIIa 48:z4,z24:-					1												
IIIa 50:g,z51:-																	
IIIa 50:z36:-					1												
IIIa 50:z4,z23,z32:-																	
IIIa 50:z4,z23:-																	
IIIa 51:g,z51:-		1			1												
IIIa 51:z4,z23:-											1						
IIIa 51:z4,z32:-		1															
IIIa 53:z4,z23:-				1	3												
IIIa 53:z4,z24:-															1		
IIIa 56:z4,z23:-					1										1		
IIIb 11:k:z53													1				
IIIb 16:z10:e,n,x,z15																	2
IIIb 38:(k):-			1														
IIIb 38:(k):1,5,7					2												
IIIb 38:(k):z35					1	1											
IIIb 38:l,v:z53					2												
IIIb 42:(k):z35					1												
IIIb 47:k:z35					1												
IIIb 47:r:z53					1												

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
IIIb 48:i:z					4										1		
IIIb 48:k:z53											1						
IIIb 48:r:z					1												
IIIb 50:k:z				1	3								2		3		
IIIb 50:k:z35																	
IIIb 50:r:-														1			
IIIb 50:r:z				1	5												
IIIb 50:z:z52					1	2											
IIIb 53:z10:z35																	
IIIb 58:l,v:z35																	
IIIb 60:r:e,n,x,z15					1						1						
IIIb 60:z52:z53																	
IIIb 61:c:z35					2												
IIIb 61:i:z53					2						1						
IIIb 61:l,[v],[z13]:1,5,[7]					8	2		1			1				2		
IIIb 61:l,[v],[z13]:z35																	
IIIb 61:r:z																	
IIIb 65:(k):z					1												
IIIb 65:c:z53																	
Indiana					2		1				3						
Infantis	2	17	7	12	173	16	9	2	3	10	33	12	11	6	109	21	5
Inganda																	
Inverness		7			1					4	8						
Irumu					1												
Isangi																	
Ituri																	
IV 11:z4,z23:-																	
IV 16:z4,z32:-					1												
IV 40:z4,z23:-															1		
IV 40:z4,z24:-						1											
IV 40:z4,z32:-																	
IV 43:z4,z23:-																	
IV 44:z36,[z38]:-											2						
IV 44:z4,z23:-					1										1		1
IV 44:z4,z24:-																	
IV 44:z4,z32:-				1													
IV 45:g,z51:-					1						1				1		
IV 45;g,z51:-													1				
IV 48:g,z51:-		1			1	1									2		
IV 48:z4,z32:-		1															
IV 50:g,z51:-					6		1				1				3		1
IV 50:z4,z23:-		2									3						
IV 50:z4,z24:-																	

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
IV 6,7:z4,z24:-																	
Jangwani																	
Javiana	3	183	67	32	54	15	14	3	16	106	501	2	6		16	17	3
Johannesburg		2			8				1		3				4	1	
Jukestown																	
Kaduna																	
Kampala		1															
Kedougou					2										1		
Kentucky		1			20	1	1				2				5		4
Kiambu			3	1	10	2					3	2			1		1
Kingabwa					3					1							
Kingston																	
Kintambo					2	1				1	1				1	1	
Kisarawe						1											
Koketime					1												
Kottbus				1	3												
Kua		1									1						
Larochelle					1												
Lattenkamp																	
Lawra																	
Leiden																	
Lille																	
Litchfield	1	9	5	4	29	1	5		1	4	1				10	3	3
Liverpool					3										1		
Livingstone					5		1								1		
Lomalinda	2				17										2		
Lome																	
London		2			3								1		1		
Louisiana											1						
Luciana				1													
Luke																	
Madras					1												
Manchester		1															
Manhattan		1	1	3	20	2	2								4		2
Matadi																	
Matopeni	1																
Mbandaka	2	5	4	18	22	8	3		1		4		3	2	4	9	
Meleagridis		1			3					1							
Memphis											1						
Miami		5	1	12	3	1				20	18				3	2	
Michigan					3												
Mikawasima																	
Minnesota				2	3					2		1					

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Mississippi		61	16	1	1	2	2			3	34			1	2		1
Molade																1	
Monschaui					5	1	1			1					4		
Montevideo		70	7	22	130	20	4	1	3	11	51	4	17	6	44	15	8
Mountpleasant										1							
Muenchen	1	66	8	31	115	11	3		2	22	71	43	7		53	13	5
Muenster			2	2	10	1	4			2	3		2	2		4	5
Napoli											1						
Narashino																	
Nchanga																	
Newmexico				2									1				
Newport	2	162	165	51	279	28	30	2	18	63	426	9	24	6	79	37	45
Newyork																	
Nigeria																	
Nima					1					3							
Norwich		10	12	3		3		1	1		6				2	8	
Nottingham																	
Offa					1												
Ohio		1		3	9	2			1		2		1		9		
Okatie							1										
Oranienburg		7	9	43	91	21	21				21	2	8	1	29	8	6
Orientalis																	
Orion					2												
Oslo			1		7	3				2	1	6			2		
Othmarschen						1		1									
Overschie	1	1															
Panama		1		25	19	6	3	1		3	3		1	2	12	2	1
Paratyphi A			1		37	2	3	3	1		1	1	1		9		
Paratyphi B	1					1	1								8	1	
Paratyphi B var. L(+) tartrate+		3	2	3	31	6	3		1		10			2	5	5	5
Pensacola		3									2	1			1		1
Poano																	
Pomona					7	2		1		1						1	
Poona	2		1	66	44	4	1	2		7	5		3	1	9	1	4
Portland					1												
Potsdam					6		1										
Praha																	
Pramiso					1												
Putten					3						1		1				
Reading		1		1	8					3	2	4	7	1	1		1
Richmond					3												
Riggil																	
Rissen				1	9							1			1	2	

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Riverside					2												
Roodepoort										1							
Rubislaw		15	17	2			1			36	23					1	
Saintpaul	3	17	3	10	116	19	13	3		27	96	7	10	6	22	15	6
Sandiego		1	2	13	18	3	2		1	27	2		1		6	2	2
Sao		1															
Saphra							2										
Saugus		3			1												
Schwarzengrund		5		1	20	3	6			1	6	2	4	2	8	2	
Senegal																	
Senftenberg		37		7	99	6	1				4			1	3		1
Serrekunda											1						
Singapore				1	1										1	1	
Sinstorf																	
Skansen											1						
Soerenga				1	1												
Solt											1						
Stanley	1	1		2	58	1					4	1			11	2	2
Stanleyville					1		1										
Suelldorf					1					2							
Sundsvall										1							
Takoradi																	
Tallahassee						1				2	1						
Tarshyne																	
Teko					1												
Telelkebir					6		1					1		1	1	2	
Tennessee				1	6	1	1				2	1			1	5	
Thompson		6	13	3	71	4	5	1	3	7	8		9	4	20	10	6
Tilene						1											
Toucra																	
Tucson																	
Typhi	6	3		8	77	3	4	1	1	21	11	4	1	3	11	4	1
Typhimurium	7	165	113	83	463	140	58	10	25	19	211	59	84	46	217	141	63
Uccle																1	
Uganda		1			35	3	1			1	1	3	2		15	4	
Umbilo															3		
Urbana		3			5	1		1		4	2						
V 48:b:-					1												
Vancouver																	
Virchow	1	1			16	1	1				2				2	2	
Vitkin																	
Wagenia																	
Wandsworth						1									1		

Serotype	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS
Wangata											1						
Waycross						1											
Welikade																	
Weltevreden				1	9	1	1			2		16			2	2	
Wernigerode																	
Westhampton																2	
Widemarsh					2												
Wien																	
Woodinville																	
Worthington				1	12					2		1			3	1	
Zega															1		
Zwickau																	
Partially serotyped	2	3			8	4			2	30	92		4		60	1	2
Rough, mucoid, and/or nonmotile isolates			6	4	37	1	5				9	1	3		5	3	
Unknown	1	4	3	3	4	29	19	1	11	242	172	3	2	1	3	1	
Total	**89**	**1204**	**606**	**743**	**4319**	**605**	**530**	**81**	**124**	**819**	**2514**	**355**	**431**	**145**	**1566**	**659**	**284**

Appendix 2b. Laboratory-confirmed *Salmonella* infections reported to CDC by serotype and reporting jurisdiction, 2013 (Kentucky to Nevada[1])

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Abaetetuba																	
Aberdeen																	
Abony											1						
Adelaide	1	1	3	1		1	2	5			9				5		
Adjame																	
Agama																	
Agbeni				1		1	1	1		2					8		
Ago																	
Agona	2	2	19	7	1	11	5	4			5	3		2	13	2	3
Agoueve																	
Alabama								2				1					
Alachua															1		
Albany							1	1							4	1	
Albert																	
Albuquerque	1																
Altona								1									
Amager							1										
Amsterdam											1						
Anatum		15	3	3		5	4	13	3		4			3	3	2	
Anecho			1									1					
Anfo																	
Apapa			1			1											
Apeyeme																	
Aqua											7						
Arechavaleta																	
Bahrenfeld																	
Baildon			2	1			2				2				3		
Bareilly	8	16	4	10		2	3	31	6		38		1		4	2	
Barranquilla			2														
Beaudesert							1										
Belem																	
Benin																	
Bere																	
Berta	2		3	2		5	19	13			10			1	3		
Birkenhead																	
Blijdorp																	
Blockley			1			1									7		
Bonariensis			1	1				1									
Bovismorbificans	1			2		2		1			1					1	
Braenderup	7	25	26	11	2	21	7	17	5		22	2		4	11	1	4

[1]The key to state name abbreviations can be found at http://www.census.gov/geo/reference/ansi_statetables.html.

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Brandenburg	2					1	1		3		2				2	1	4
Brazil																	
Bredeney			2								4				1	2	
Buzu																	
Canada																	
Cannstatt																	
Caracas														1			
Carmel						1											
Carrau			2								3						
Cerro																	1
Chailey							5				1						
Chandans								1									
Chester										1	1						
Chichiri			1														
Choleraesuis																	
Choleraesuis var. Decatur						1											
Choleraesuis var. Kunzendorf							1										
Clackamas																	
Coeln																	
Colindale							1										
Concord																	1
Corvallis			1				1							1			
Cotham	4		1	1		3	1	9			2				2		1
Cubana			1			1		1									
Cuckmere							1										
Dahra	1					1											
Daytona																	
Denver																	
Derby							8		3		8				1	1	1
Detmold				1													
Dublin			6	3	4	3	2				2			2	1	6	2
Duisburg																	
Durban						3		1							1		
Durham																	
Ealing			4			2		2		1					1	1	
Eastbourne		1	1	1		1									1		
Enteritidis	93	117	222	223	53	275	156	217	75	12	202	20	2	37	216	35	24
Eppendorf																	
Erfurt																	
Falkensee																	
Fann							1										
Farmsen																	

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Florida																	
Fluntern						1											
Freetown																	
Fresno			2														
Galiema							1			1							
Gaminara		18	1			1		1	2		2				1	1	
Gatuni						1											
Gera																	
Give	1	25	1				5	1	7		5					1	
Glidji																	
Godesberg																	
Goettingen																	
Guinea									1								
Hadar		3	4	1		5	7	1	1	2	2	1		1	22		
Hartford	4	2	3	1	2	2	9	7	2		8				2		
Hatfield																	
Hato																	
Havana		1									1						
Heidelberg	4	34	11	9	4	28	12	26	6		24	2	2	8	54	12	20
Herston																	
Holcomb															2		
Horsham																1	
Hull																	
Hvittingfoss		18		1		2	1	2	2		1				2		
I 11:r:-				1							1						
I 13,22:z:-				1													
I 13,23:-:1,5							1										
I 13,23:b:-								1			18				1		
I 16:d:-																	
I 3,10:-:1,5			2												1		
I 3,10:e,h:-																	
I 3,10:l,v:-																	
I 3,10:l,z13:-																	
I 30:b:-				1													
I 38:k:-																	
I 4,[5],12:-:1,2				6			1				2						
I 4,[5],12:-:1,7				1													
I 4,[5],12:b:-			6		2	26	11	14	3		8			2	2	1	
I 4,[5],12:d:-				3					1								
I 4,[5],12:e,h:-						1		2							2	1	
I 4,[5],12:i:-	33	22	47	50	7	92	112	34	12		67	13	2	16	93	27	104
I 4,[5],12:l,v:-							1										
I 4,[5],12:r:-								1							1	1	

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
I 41:z4,z23:-											3						
I 45:b:-																	1
I 6,7:-:1,2																	
I 6,7:-:1,5			5	5		2					2				18	2	
I 6,7:-:e,n,z15																	
I 6,7:b:-				1													
I 6,7:c:-			2														
I 6,7:d:-							1										
I 6,7:e,h:-				6							1				1		
I 6,7:i:-				1													
I 6,7:k:-			3	1							1				4		2
I 6,7:l,w:-									1								
I 6,7:r:-															1	2	
I 6,7:y:-				1													
I 6,7:z10:-																	
I 6,8:-:1,2				1							6						
I 6,8:-:1,5			1														
I 6,8:-:e,n,x																	
I 6,8:-:e,n,z15															1		
I 6,8:d:-			2	5					1								
I 6,8:e,h:-				3			1										
I 6,8:i:-				2													
I 6,8:l,v:-				2													
I 6,8:r:-							1										
I 6,8:y:-											1						
I 6,8:z10:-																	
I 8,20:i:-															1		
I 9,12:-:1,5			1	12											1		
I 9,12:-:1,6																	
I 9,12:a:-				6													
I 9,12:e,h:-				2													
I 9,12:g,z51:-				1											1		
I 9,12:i,z28:-									5								
I 9,12:l,v:-																	
I 9,12:l,z28:-				1					2		1				1		
II 13,22:z:-				1													
II 16:g,[m],[s],t:[1,5]																	
II 16:m,t:-																	
II 17:g,t:[e,n,x,z15]																	
II 21:z10:[z6]																	
II 3,10:l,z28:1,5																	
II 30:l,z28:z6																	
II 40:b:-				1													

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
II 47:b:1,5																	
II 47:b:e,n,x,z15																	
II 48:a:z6																	
II 50:b:z6								1									
II 58:c:z6								2									
II 58:l,z13,z28:z6											3				1		
II 9,12:l,w:e,n,x																	
IIIa 13,22:z4,z23:-																	
IIIa 13,23:g,z51:-																	
IIIa 18:z4,z23:-																	3
IIIa 21:g,z51:-																	
IIIa 35:g,z51:-																	
IIIa 35:z29:-																	
IIIa 40:g,z51:-																	
IIIa 40:z36:-																	
IIIa 40:z4,z23:-											2						
IIIa 41:z4,z23:-											2						
IIIa 41:z4,z32:-				1													
IIIa 42:z4,z23:-																	
IIIa 42;g,z51:-																	
IIIa 44:z4,z24:-																	
IIIa 48:g,z51:-											4				1		
IIIa 48:z4,z23:-																	
IIIa 48:z4,z24:-																	
IIIa 50:g,z51:-															1		
IIIa 50:z36:-																	
IIIa 50:z4,z23,z32:-																	
IIIa 50:z4,z23:-																	
IIIa 51:g,z51:-																	
IIIa 51:z4,z23:-								1									
IIIa 51:z4,z32:-																	
IIIa 53:z4,z23:-																	
IIIa 53:z4,z24:-																	
IIIa 56:z4,z23:-						1											
IIIb 11:k:z53																	
IIIb 16:z10:e,n,x,z15																	
IIIb 38:(k):-																	
IIIb 38:(k):1,5,7																	
IIIb 38:(k):z35																	
IIIb 38:l,v:z53																	
IIIb 42:(k):z35																	
IIIb 47:k:z35			1					1									

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
IIIb 47:r:z53																	
IIIb 48:i:z			1														
IIIb 48:k:z53																	
IIIb 48:r:z			2														
IIIb 50:k:z																	
IIIb 50:k:z35																	
IIIb 50:r:-																	
IIIb 50:r:z																	
IIIb 50:z:z52																	
IIIb 53:z10:z35				1													
IIIb 58:l,v:z35																	
IIIb 60:r:e,n,x,z15								1	1								
IIIb 60:z52:z53															1		
IIIb 61:c:z35								2									
IIIb 61:i:z53																	
IIIb 61:l,[v],[z13]:1,5,[7]			1														
IIIb 61:l,[v],[z13]:z35												1					
IIIb 61:r:z																	
IIIb 65:(k):z																	
IIIb 65:c:z53																	
Indiana																	
Infantis	7	18	36	16	6	22	30	19	9		73	3		2	35	5	53
Inganda																	2
Inverness		1							2		19						
Irumu																	
Isangi			1	1		2									1		
Ituri	1																
IV 11:z4,z23:-															1		
IV 16:z4,z32:-																	
IV 40:z4,z23:-																	
IV 40:z4,z24:-		1															
IV 40:z4,z32:-		1															
IV 43:z4,z23:-								1			2						
IV 44:z36,[z38]:-																	
IV 44:z4,z23:-		1	1														
IV 44:z4,z24:-								1			1						
IV 44:z4,z32:-											1						
IV 45:g,z51:-																	
IV 45;g,z51:-																	
IV 48:g,z51:-	1			1								1					
IV 48:z4,z32:-																	
IV 50:g,z51:-			2			1		1			1						

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
IV 50:z4,z23:-		2						1									
IV 50:z4,z24:-																	
IV 6,7:z4,z24:-																	
Jangwani											1						
Javiana	20	64	47	44	4	13	13	39	69		241	1	2	4	44	22	1
Johannesburg	2		1			1	1	1			4				2		3
Jukestown																	
Kaduna																	
Kampala																	
Kedougou											1				2		
Kentucky	3		5	2		1	2	1							6		
Kiambu		1	1	3		1		3						1	2	2	1
Kingabwa																	
Kingston																	
Kintambo	1			1													
Kisarawe																	
Koketime																	
Kottbus						1		1									
Kua																	
Larochelle																	
Lattenkamp															1		
Lawra																	
Leiden																	
Lille																	
Litchfield	3	8	6	2		4	5	7	3		2				10		2
Liverpool			1			1	1				2						
Livingstone					1		5								2	1	2
Lomalinda			2				2	1			1					1	
Lome							1					2					
London				1		2					1			1	1		
Louisiana																	
Luciana									1								
Luke																	
Madras																	
Manchester																	
Manhattan		1	3			1	1	6			8				1		
Matadi																	
Matopeni																	
Mbandaka	3		7	3	2	11	4	5	2		9	2	2		3		8
Meleagridis	1																
Memphis																	
Miami	1		3			3		2	1		15				1		
Michigan																	

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Mikawasima			1														
Minnesota							1	3			1						
Mississippi		73	1		1	1	3	9	81		83			1	5		
Molade																	
Monschaui						2	5	2							4	1	
Montevideo	4	90	29	2	5	18	13	16	14		43	1			11	17	2
Mountpleasant																	
Muenchen	7	56	11	6	2	14	12	37	12	1	51	3		3	14	17	5
Muenster		2	10	1		3	2	1		1	2	1		2	2		
Napoli																	
Narashino											1						
Nchanga															1		
Newmexico																	
Newport	45	161	38	72	6	65	42	104	75	2	278	3	3	7	82	31	6
Newyork														2			
Nigeria																	
Nima	1		1	1													
Norwich	5	3	1	1	1		2	17	11		1				3	2	
Nottingham											1				2		
Offa			1														
Ohio		1	4	1							2				3		3
Okatie																	
Oranienburg	9	16	15	9		15	19	18	3		8	4		2	27	14	12
Orientalis																	
Orion			1														
Oslo						1		2			2						
Othmarschen																	
Overschie															1		
Panama		2	5			1	1	3			3			1	6		1
Paratyphi A	1		4	3						1	3			1	8		
Paratyphi B			1	1	2	12				1					2		3
Paratyphi B var. L(+) tartrate+	6	7	2	4			4	16			4				4		3
Pensacola		1		1							1						
Poano																	
Pomona			1		1		1		1		1	1			6	2	2
Poona		4	5	4	1	5	5	3		1	9	1		1	5	14	2
Portland																	
Potsdam															1		
Praha							1										
Pramiso																	
Putten																	1
Reading		2	1				2	1						1	1		

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Richmond											2				1		
Riggil				1													
Rissen	1	3			1	1	1				1				2		
Riverside																	
Roodepoort																	
Rubislaw		21	1			1		5	18		12				5		
Saintpaul	8	11	96	9	5	13	32	19	5	5	41	4	1	9	31	9	9
Sandiego	2	1	7			5	9	3			6		1	3	7	1	7
Sao																	
Saphra		2															
Saugus																	
Schwarzengrund	2	1	23	2		5	5	2			11	1			22		
Senegal							1										
Senftenberg		4	3	3		3	2	3	1		3	2			5		6
Serrekunda																	
Singapore									1								
Sinstorf																	
Skansen																	
Soerenga																	
Solt																	
Stanley	3	6	5	1	1	5	2	5			1				5	2	1
Stanleyville																	
Suelldorf																	
Sundsvall																	
Takoradi																	
Tallahassee	1						1				1				1		
Tarshyne				1													
Teko																	
Telelkebir	1			1				1			1						
Tennessee		1	2					2							1	2	
Thompson	6	11	11	11	6	29	9	39	3		5			4	29		1
Tilene																	
Toucra				1													
Tucson											2						
Typhi			19	13		3	7	3			10			3	30	1	
Typhimurium	100	84	146	98	15	136	146	322	102	14	250	38	7	62	147	59	39
Uccle																	
Uganda		9	1	1		2	19	4			1			1	6		
Umbilo																	
Urbana		3	1													1	
V 48:b:-																	
Vancouver				1													
Virchow		1	2			4	3	2		1	1				1	1	1

Serotype	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV
Vitkin							1										
Wagenia																	
Wandsworth								1									
Wangata																	
Waycross																	
Welikade																	1
Weltevreden		1	2	1	1	2	1				2						
Wernigerode						1											
Westhampton								1									2
Widemarsh			2												2		
Wien							2										
Woodinville																	
Worthington		1	1		1			2			1						
Zega																	
Zwickau																	
Partially serotyped	471	2		26		7	16	1	3	47	3		36	5	1	7	1
Rough, mucoid, and/or nonmotile isolates		1	8	18	1	2	4	4			20				2	5	2
Unknown		2	73	56		13	3	2	4	12	11	3	234	1	10	28	2
Total	**880**	**981**	**1054**	**821**	**138**	**937**	**830**	**1161**	**563**	**105**	**1751**	**115**	**293**	**195**	**1112**	**349**	**355**

Appendix 2c. Laboratory-confirmed *Salmonella* infections reported to CDC by serotype and reporting jurisdiction, 2013 (New York to Wyoming[1])

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Abaetetuba	1																
Aberdeen	2			1	1												
Abony														2			
Adelaide	20				3	1	2		1								
Adjame	1																
Agama	1																
Agbeni	12	14			3					1		1			3	1	
Ago	2													1			
Agona	31	10	2	3	20	4	5	2	6	30	8	4		10	12	2	
Agoueve	1	2															
Alabama			1						3								
Alachua	2	1			2			1									
Albany	2			2				1			5	1					
Albert			1					2									
Albuquerque																	
Altona	1	2									1	2					
Amager																	
Amsterdam																	
Anatum	8	9	3	1	4		4		5	20		5		5	5		1
Anecho	1				1												
Anfo																	
Apapa	1			1													
Apeyeme											1						
Aqua							1										
Arechavaleta	2		1		1												
Bahrenfeld					1												
Baildon					3				1			5			1	1	
Bareilly	11	2	14	2	7	1	9		31			35		3	1	2	
Barranquilla																	
Beaudesert																	
Belem	1																
Benin																	
Bere		1															
Berta	19	11	11	1	10	4	7		4	5	1	19		3	3	1	
Birkenhead												1					
Blijdorp		1															
Blockley	25					1	1										
Bonariensis	1																
Bovismorbificans	6	1		1	5		6		3			3		1			
Braenderup	36	21	31	6	24	1	18	4	14	55	1	37		8	49	3	

[1]The key to state name abbreviations can be found at http://www.census.gov/geo/reference/ansi_statetables.html.

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Brandenburg	8				2		1		2	1	5	6		13	1		
Brazil																	
Bredeney	2	4	1						2								
Buzu							1		1								
Canada																	
Cannstatt																	
Caracas	2																
Carmel					2												
Carrau	1						4				1						
Cerro	3			1	1				1			2		1	1		
Chailey	3	1							1		1			2	4		
Chandans																	
Chester	3				1		2							1		1	
Chichiri																	
Choleraesuis	1							1		4							
Choleraesuis var. Decatur																	
Choleraesuis var. Kunzendorf									1								
Clackamas				1													
Coeln					1									1			
Colindale																	
Concord												1		1	1		
Corvallis	1						1		1								
Cotham	4			1	6				1		2	2		5	5		
Cubana	4											1					
Cuckmere																	
Dahra																	
Daytona												1		2			
Denver																	
Derby	7	1			3	1	2		3	2		5		1	4		
Detmold																	
Dublin	12	3		2	8	1		1			1	3		3	4		
Duisburg																	
Durban	1				1												
Durham																	
Ealing	3	2						1			2			1			
Eastbourne	1			1				4						2			
Enteritidis	584	297	94	80	456	26	118	20	155	155	60	200	7	161	215	43	
Eppendorf	1																
Erfurt						1											
Falkensee							1										
Fann																	
Farmsen														1			

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Florida																	
Fluntern		1			2		1							2			
Freetown																	
Fresno												1					
Galiema																	
Gaminara	5	6			3		4							2	3		
Gatuni																	
Gera		2															
Give	6		3	1	2		4		2	7	2			1	3	1	
Glidji	1																
Godesberg			1														
Goettingen																	
Guinea											1						
Hadar	27	1		6	8		1	2	2	7	3	7		8	5		
Hartford	12	14	2		6		6		3		1	6			6		
Hatfield														1			
Hato																	
Havana	8	2			1						1	1		1	1		
Heidelberg	185	31	24	23	26	8	5	2	17	81	15	16		33	12	3	
Herston	1		1														
Holcomb	2	1			3												
Horsham																	
Hull																	
Hvittingfoss	6	2		1								2					
I 11:r:-												1					
I 13,22:z:-																	
I 13,23:-:1,5	1																
I 13,23:b:-							88					4			2		
I 16:d:-																	
I 3,10:-:1,5	1				2												
I 3,10:e,h:-																	
I 3,10:l,v:-																	
I 3,10:l,z13:-																	
I 30:b:-																	
I 38:k:-																	
I 4,[5],12:-:1,2							1					2					
I 4,[5],12:-:1,7																	
I 4,[5],12:b:-	11			2	6				8			10		2	1		
I 4,[5],12:d:-												2					
I 4,[5],12:e,h:-							1								1		
I 4,[5],12:i:-	171	118	37	22	105	11	43		49	4	27	59		43	96	11	
I 4,[5],12:l,v:-	1																
I 4,[5],12:r:-							1										

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
I 41:z4,z23:-																	
I 45:b:-																	
I 6,7:-:1,2					4												
I 6,7:-:1,5	1						1					1					
I 6,7:-:e,n,z15																	
I 6,7:b:-																	
I 6,7:c:-	1				1												
I 6,7:d:-												1					
I 6,7:e,h:-												2					
I 6,7:i:-																	
I 6,7:k:-	4	1															
I 6,7:l,w:-																	
I 6,7:r:-	1											2					
I 6,7:y:-												2					
I 6,7:z10:-	1																
I 6,8:-:1,2																	
I 6,8:-:1,5					2												
I 6,8:-:e,n,x																	
I 6,8:-:e,n,z15																	
I 6,8:d:-												1					
I 6,8:e,h:-																	
I 6,8:i:-																	
I 6,8:l,v:-																	
I 6,8:r:-																	
I 6,8:y:-																	
I 6,8:z10:-															1		
I 8,20:i:-																	
I 9,12:-:1,5	1																
I 9,12:-:1,6																	
I 9,12:a:-																	
I 9,12:e,h:-															1		
I 9,12:g,z51:-															1		
I 9,12:i,z28:-																	
I 9,12:l,v:-	2																
I 9,12:l,z28:-							5		2			1		1			
II 13,22:z:-																	
II 16:g,[m],[s],t:[1,5]																	
II 16:m,t:-												1					
II 17:g,t:[e,n,x,z15]																	
II 21:z10:[z6]																	
II 3,10:l,z28:1,5																	
II 30:l,z28:z6												1					
II 40:b:-																	

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
II 47:b:1,5											2						
II 47:b:e,n,x,z15														1			
II 48:a:z6																	
II 50:b:z6																	
II 58:c:z6	1																
II 58:l,z13,z28:z6	1				2												
II 9,12:l,w:e,n,x																	
IIIa 13,22:z4,z23:-																	
IIIa 13,23:g,z51:-																	
IIIa 18:z4,z23:-																	
IIIa 21:g,z51:-											1						
IIIa 35:g,z51:-																	
IIIa 35:z29:-																	
IIIa 40:g,z51:-				1													
IIIa 40:z36:-											1						
IIIa 40:z4,z23:-																	
IIIa 41:z4,z23:-																	
IIIa 41:z4,z32:-												1					
IIIa 42:z4,z23:-																	
IIIa 42;g,z51:-														2			
IIIa 44:z4,z24:-																	
IIIa 48:g,z51:-							1					1					
IIIa 48:z4,z23:-	1																
IIIa 48:z4,z24:-							1										
IIIa 50:g,z51:-					1												
IIIa 50:z36:-																	
IIIa 50:z4,z23,z32:-									1								
IIIa 50:z4,z23:-											1						
IIIa 51:g,z51:-																	
IIIa 51:z4,z23:-												1					
IIIa 51:z4,z32:-																	
IIIa 53:z4,z23:-																	
IIIa 53:z4,z24:-																	
IIIa 56:z4,z23:-												1					
IIIb 11:k:z53																	
IIIb 16:z10:e,n,x,z15				1													
IIIb 38:(k):-																	
IIIb 38:(k):1,5,7																	
IIIb 38:(k):z35					1												
IIIb 38:l,v:z53																	
IIIb 42:(k):z35																	
IIIb 47:k:z35																	

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
IIIb 47:r:z53																	
IIIb 48:i:z	1																
IIIb 48:k:z53																	
IIIb 48:r:z																	
IIIb 50:k:z	1				1									1			
IIIb 50:k:z35									1								
IIIb 50:r:-																	
IIIb 50:r:z														1			
IIIb 50:z:z52																	
IIIb 53:z10:z35																	
IIIb 58:l,v:z35	1																
IIIb 60:r:e,n,x,z15																	
IIIb 60:z52:z53																	
IIIb 61:c:z35									1								
IIIb 61:i:z53																	
IIIb 61:l,[v],[z13]:1,5,[7]												1					
IIIb 61:l,[v],[z13]:z35	1																
IIIb 61:r:z												3					
IIIb 65:(k):z																	
IIIb 65:c:z53				1													
Indiana																	
Infantis	117	48	24	10	43		22	3	31	145	22	18	1	14	36	26	
Inganda																	
Inverness	2				4		5					1					
Irumu																	
Isangi																	
Ituri																	
IV 11:z4,z23:-	2																
IV 16:z4,z32:-														1			
IV 40:z4,z23:-																	
IV 40:z4,z24:-															1		
IV 40:z4,z32:-		1			1							1					
IV 43:z4,z23:-					1												
IV 44:z36,[z38]:-												1					
IV 44:z4,z23:-	1				3	1						1					
IV 44:z4,z24:-															2		
IV 44:z4,z32:-					2						1						
IV 45:g,z51:-					1				1			1					
IV 45;g,z51:-																	
IV 48:g,z51:-	2																
IV 48:z4,z32:-	2																
IV 50:g,z51:-	1			2	2				1			1		2	3		

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
IV 50:z4,z23:-	1								1					1			
IV 50:z4,z24:-															1		
IV 6,7:z4,z24:-												1					
Jangwani												1				1	
Javiana	56	24	10	4	39	6	251	1	48	108	5	61		7	13	5	
Johannesburg	1	1					2				1			2	3		
Jukestown	1																
Kaduna			1								2						
Kampala																	
Kedougou	2																
Kentucky	15	1	1		9				1			4		7	2		
Kiambu	2		12		2		1					1		3	1		
Kingabwa					1										1		
Kingston	1																
Kintambo				1										1			
Kisarawe																	
Koketime																	
Kottbus					1												
Kua																	
Larochelle	3						1										
Lattenkamp											1						
Lawra				1										1			
Leiden					1												
Lille	1	2															
Litchfield	9	2	27		21		1		3		1	7		2	3	1	
Liverpool	3																
Livingstone	1										1	1					
Lomalinda	2	2		2								3		3			
Lome																	
London	4	1	1		4			1	1					1			
Louisiana																	
Luciana									1					1			
Luke											1						
Madras																	
Manchester																	
Manhattan	1	2			7	1	1			1							
Matadi				1													
Matopeni																	
Mbandaka	20	10	2	4	7	1	2	5	2	10	3	7		8	2	3	
Meleagridis	1						1		4						1		
Memphis																	
Miami	4	5			6	1	7	1	2	1		8			2	1	
Michigan														1			

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Mikawasima																	
Minnesota	1			1							1	2					
Mississippi	11	2	3	1	2		3		34	41		4				1	
Molade					1												
Monschaui	7	1		1	5				2		1			2			
Montevideo	29	25	5	6	23		29	4	11	59	9	6		12	11	6	
Mountpleasant																	
Muenchen	26	30	12	3	36	3	45	1	16	47	2	19		14	10	3	
Muenster	9	3			4	1			1			1			5		
Napoli	2				1												
Narashino																	
Nchanga																	
Newmexico																	
Newport	127	68	132	15	99	11	228	4	95	332	23	117		22	74	18	
Newyork																	
Nigeria									1								
Nima	1			2			2		1								
Norwich	1	1	18		4			1	13			2		2			
Nottingham	1																
Offa																	
Ohio	7				5				1		1			2	4		
Okatie																	
Oranienburg	45	22	9	9	34	3	7	1	2	73	12	9		21	14		
Orientalis														1			
Orion																	
Oslo	2				1									1			
Othmarschen															1	1	
Overschie				2													
Panama	24	3	1	3	8	1			2	1	1	5		6	4	2	
Paratyphi A	20	4			4				3	6	1	3		11	10	1	
Paratyphi B				1						5		1		1		2	
Paratyphi B var. L(+) tartrate+	21	54	42	2	13		3		3	36	7	6		14			
Pensacola							2					1					
Poano							2										
Pomona	9	2			6		8		1	1				1	1		
Poona	16	6	6	3	5	1	2		1	33	6	2		6	4	3	1
Portland														1			
Potsdam	9				1												
Praha																	
Pramiso																	
Putten															1		
Reading	3	4		2	3			1	2			2		3			

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Richmond	3																
Riggil																	
Rissen	2	1			1		1		1		2			2	2		
Riverside																	
Roodepoort	2	1															
Rubislaw	1	1	12				5		4	2		2			2		
Saintpaul	53	27	11	12	25	13	44	7	11	47	13	34		24	26	4	
Sandiego	20	5	1	3	10		3		4	1		1		6	5	1	
Sao									1								
Saphra																	
Saugus																	
Schwarzengrund	77	3	2	2	11		8		2		8	5			2	1	
Senegal																	
Senftenberg	8	1		2	3		7	1	3	8	1	2			1	1	
Serrekunda																	
Singapore		1												1			
Sinstorf					1												
Skansen																	
Soerenga	1						1										
Solt																	
Stanley	16	11	2		4	1			1	5	6	5		11	2		
Stanleyville											1						
Suelldorf		1										1					
Sundsvall	1													1			
Takoradi														1			
Tallahassee					1									1			
Tarshyne	1																
Teko																	
Telelkebir	3				1				1			3					
Tennessee				2	2				1		1	2		2	1		
Thompson	112	13	18	13	40	13	7	1	12	16	2	23		14	13	3	
Tilene	1																
Toucra																	
Tucson																	
Typhi	54		2	3	13	4		3	4	5	1	14		12	2		
Typhimurium	375	208	98	82	376	18	89	51	130	201	64	221		99	132	38	2
Uccle																	
Uganda	12	2	12	1	3					1		2		2	8	1	
Umbilo																	
Urbana	6	6			2		5		1		1	1					
V 48:b:-																	
Vancouver																	
Virchow	9	4			3	1			1	1		1		5			

Serotype	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Vitkin																	
Wagenia	1																
Wandsworth		2		1										1			
Wangata																	
Waycross																	
Welikade	1																
Weltevreden	7	1	1	2	3				1			2		1	1		
Wernigerode																	
Westhampton																1	
Widemarsh	6				1												
Wien																	
Woodinville							1										
Worthington					1	1	1		1			1			1		
Zega																	
Zwickau						1											
Partially serotyped		4	18	1				1	36	354			86	6	13		35
Rough, mucoid, and/or nonmotile isolates	25	13		1	22		7				1	7		1	3		
Unknown	43	1219		1	1		15		1	3458	1	84	3		29	17	28
Total	**2750**	**2410**	**710**	**364**	**1676**	**142**	**1165**	**128**	**823**	**5370**	**348**	**1174**	**97**	**692**	**895**	**210**	**67**

Appendix 3a. Laboratory-confirmed *Salmonella* infections reported to CDC by serotype and year, 2003–2013

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Aarhus	9	3	5	6	6	6	4	3	1			43
Aba	1			1		1			1			4
Abaetetuba	1	1		3	3	1	5	3		3	3	23
Aberdeen	3	6	6	10	13	6	14	7	6	6	7	84
Abony	9	10	2	8	3	3	3	6	4	4	8	60
Abortusequi							1	1	2	1		5
Adelaide	60	76	71	70	59	68	43	81	95	64	133	820
Adime	1											1
Adjame											1	1
Aequatoria		5	2									7
Africana		1										1
Afula		1										1
Agama	4	2	8	4	2		7	2	2	1	2	34
Agbeni	7	72	15	15	16	16	15	23	39	58	67	343
Ago				1	4	4	14	7	4	6	6	46
Agona	523	407	369	538	512	610	392	509	505	339	368	5072
Agoueve	2	2	3	3	2	1	3	4	7	4	3	34
Ahoutoue					1							1
Ahuza							1					1
Ajiobo	1	1		1				1				4
Alabama		3	3	5				2	4	3	9	29
Alachua	10	28	21	18	19	14	24	18	14	16	11	193
Alagbon		1	3			1						5
Albany	25	43	39	36	39	23	31	30	30	21	27	344
Albert			1				3	1	3	5	5	18
Albuquerque									1	1	2	4
Allandale		1					2			1		4
Allerton		1										1
Altona		2	1	4	6	6	10	14	77	15	10	145
Amager	3	18	5	4	4	9	5	8	2	7	3	68
Amherstiana				1								1
Amounderness						1						1
Amoutive				1	2	2	2	1				8
Amsterdam	6	4	4	4	2	2	7	4	7	3	2	45
Amunigun										1		1
Anatum	187	261	203	254	210	219	227	227	302	405	258	2753
Anecho	2		2	3	9	9		2		4	4	35
Anfo			1	1	2	2	1	1	2	2	1	13
Antsalova		1										1
Apapa	3	12	7	7	13	8	5	5	3	4	6	73
Apeyeme		1	2				2	1			5	11
Aqua	1	2	2	3	1	1	4	3	7	7	8	39

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Arechavaleta	3	14	4	2	13	9	14	12	9	8	4	92
Assen			1			1			2	1		5
Assinie				4								4
Atento										1		1
Ati		2										2
Augustenborg			1			2	1		1	1		6
Avignon				1								1
Avonmouth									1			1
Ayinde								1				1
Azteca			1			1						2
Babelsberg		2							1			3
Bahrenfeld				1				1		2	1	5
Baildon	12	7	33	14	17	9	12	88	26	25	35	278
Ball					1			3	1			5
Banana	3		2	1					2	1		9
Bandia		1										1
Bareilly	240	232	201	256	249	224	284	339	429	896	354	3704
Barranquilla	3	3	1	5	6	26	2	4	11	13	3	77
Bassa	1											1
Bassadji		1								1		2
Beaudesert	1			3	2	3	3	5	1	1	1	20
Belem	3	1						1	1	3	2	11
Benin			1	6		1		1	4	3	1	17
Bere	1		2	7	7	11	3	2	1	1	1	36
Bergen	1			1					1			3
Berkeley										1		1
Berta	201	409	209	252	191	188	183	264	321	302	259	2779
Bietri						1						1
Bijlmer			2									2
Binningen		1										1
Birkenhead	4	5	2		1	3	4	3		1	2	25
Bispebjerg	1											1
Blegdam	2	8	4			1	1	2	1	1		20
Blijdorp	1										1	2
Blockley	119	112	54	66	71	55	56	37	28	49	41	688
Bobo			1									1
Bochum	1											1
Bolombo									1			1
Bonames	1											1
Bonariensis	4	3	1	2	4	5	2	1	6	12	5	45
Bonn		2		1			1					4
Bournemouth	2	1	2	1	2	1	1	1				11
Bousso			3	1				2				6

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Bovismorbificans	69	110	73	71	47	76	62	67	110	97	57	839
Bradford	3	1		1	1		1	1	1			9
Braenderup	553	684	603	561	589	658	720	731	739	830	703	7371
Brancaster	1									1		2
Brandenburg	116	80	134	94	73	79	87	63	68	74	95	963
Brazil	2	2	2	3	3	4	1	1	1		1	20
Brazos								1				1
Brazzaville	1		2	3	1	1	1		1			10
Bredeney	56	27	26	27	23	28	25	37	29	67	38	383
Breukelen					1							1
Brezany	1		1			1						3
Brijbhumi										1		1
Bron		3		1		1						5
Bronx					1					1		2
Brooklyn	1											1
Bruck							1	1				2
Brunei		3	2			1		1	2	1		10
Bsilla		3	1			2						6
Budapest					1							1
Bukavu	1				2	1			1	3		8
Bukuru		1										1
Burgas					1							1
Burundi						1						1
Butantan			1				1					2
Buzu	1			2	2			1		5	2	13
California	5	1		2		1	1			1		11
Canada	1	1	1							1	2	6
Cannstatt	1			1		2	15	3	6	1	2	31
Caracas				1		1			2		3	7
Carmel		9	4	1	4	2	2	4	1	6	5	38
Carrau	7	8	9	10	1	7	64	31	20	33	19	209
Cerro	31	22	26	35	31	48	26	29	18	43	37	346
Chailey	1	3	2			2	3	11	7	9	30	68
Chandans		1	5	1	1	1	1	1	1		1	13
Charity							1	1		1		3
Chester	51	15	15	29	31	27	41	86	64	51	25	435
Chicago	1			1	2			1				5
Chichiri	1							4		4	2	11
Chile						1						1
Chincol	1		2	1				2	1	1		8
Chingola					1							1
Chittagong			7									7
Choleraesuis	13	17	7	12	15	18	22	8	14	14	8	148

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Choleraesuis var. Decatur		1					2				1	4
Choleraesuis var. Kunzendorf	6	9	6	11	10	4	9	4	3	6	5	73
Clackamas	4	1	1	1	2	5		5	6	2	1	28
Claibornei		1		1								2
Cleveland		1					1					2
Coeln	2	3	2	4	4	6		4	2	5	2	34
Colindale	8	3	4	13	5	6	7	4	5	5	3	63
Colorado	1											1
Concord	3	4	6	17	20	31	38	18	7	9	4	157
Corvallis	3	4	13	23	22	30	13	23	19	27	12	189
Cotham	6	5	9	12	15	22	20	23	25	47	69	253
Cremieu			1									1
Croft				1								1
Cubana	24	18	13	17	25	9	20	33	15	30	9	213
Cuckmere		1		1							1	3
Cullingworth			6			1						7
Curacao			1					1				2
Cyprus									1			1
Daarle		1	1			1						3
Dahlem				1								1
Dahomey	1											1
Dahra	1		2	2	1		1	1	1		2	11
Dakar					1							1
Damman		1										1
Daytona	10	10	5	5	1	3	2	7	10	7	6	66
Denver	5	1	5	1	3	6	3	3	5		5	37
Derby	125	137	123	139	148	143	131	134	114	114	84	1392
Detmold											1	1
Diguel	1		1									2
Diourbel			1									1
Djakarta				1						1		2
Djugu		2	1	2	2	2				1		10
Doncaster	1											1
Doorn				1								1
Doulassame			1									1
Dublin	65	73	55	88	109	111	103	125	102	118	137	1086
Duisburg	2			1	2	5	3	3	4	1	7	28
Durban	3	16	6	11	12	7	17	6	5	9	12	104
Durham	4	3	8	4	1	3	4	4	3	5	1	40
Duval		1		1			1					3
Ealing	12	13	27	12	28	25	33	26	24	17	20	237
Eastbourne	18	8	30	16	16	27	15	13	19	25	16	203

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Eboko							1					1
Ebrie	1					1	1			2		5
Echa	1		1									2
Edinburg	20	27	20	17	8	7	10	3	1			113
Edmonton			1									1
Ekotedo										1		1
Ekpoui							1					1
Elisabethville		1			2				1			4
Elokate	1											1
Elomrane	1	3			1							5
Emek	11	6	7	3	7		3					37
Emmastad							1					1
Entebbe	1	1		3	6			1				12
Enteritidis	4914	5028	6732	6740	6152	7225	7144	8915	7553	7119	6928	74450
Enugu						1	1					2
Eppendorf		1		2	1	5			1		1	11
Erfurt											1	1
Escanaba					1							1
Eschberg									1			1
Eschweiler			1									1
Essen	1	2	1	1	5	1		2		1		14
Falkensee	1		4		1		1	1			1	9
Fann			1								1	2
Farmingdale										2		2
Farmsen	1	1	1			1					1	5
Farsta		1		1								2
Fayed	1		1	1								3
Fillmore						1						1
Fischerkietz				1								1
Fischerstrasse					4	1	3			1		9
Fitzroy		1										1
Florida	3	1	6	3	7	1	8	5	3	3	3	43
Fluntern	5	8	3	3	5	6	7	8	9	4	8	66
Fomeco			1									1
Frankfurt							1		1			2
Freefalls							1					1
Freetown	6	2	11			1	2		1		1	24
Freiburg	1					1						2
Fresno					1	4	4		1	1	5	16
Friedenau	1			1						1		3
Friedrichsfelde		2	1	1	1	1		1		1		8
Frintrop				1					1			2
Fulica			1									1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Fyris			1	2								3
Galiema	1	1					1		1		2	6
Gambia			1							1		2
Gaminara	86	134	99	77	79	84	62	62	100	95	75	953
Garba									1	1		2
Garoli				1								1
Gatow			2		2		2	1				7
Gatuni	3	3	1	2	3	3	2	2	4		1	24
Georgia	2	2	1	6	5	2		1	1	1		21
Gera	1										2	3
Give	100	107	103	124	112	118	111	104	120	149	102	1250
Giza										1		1
Glasgow					2					1		3
Glidji											1	1
Glostrup	2	2	10	5	5	5	3	2	5	5		44
Gnesta		1			2	2						5
Godesberg											1	1
Goettingen	1	2			3	3	1	2	2	2	1	17
Goldcoast		1	2		1			4	1	1		10
Goma	1											1
Gombe		1				1						2
Gouloumbo							1					1
Goverdhan					1					1		2
Grandhaven				1								1
Grumpensis	1		102	9	2	2	3	1	2			122
Guildford					1		2			1		4
Guinea		1	3	1	3	2	1		2	2	5	20
Gwale				1								1
Hadar	295	338	214	283	289	313	272	224	205	245	179	2857
Haduna								1		1		2
Haifa	3	5	5	5	5	5	6	4	7	8		53
Hannover		1								2		3
Harburg	1			1								2
Harcourt				1								1
Harrisonburg		1										1
Hartford	188	190	239	199	197	211	184	252	241	253	158	2312
Hatfield	1							1			1	3
Hato	1	2		4	2	4	1	1	1		1	17
Havana	29	32	26	37	35	54	58	41	29	28	26	395
Heidelberg	1845	1758	1905	1495	1610	1284	1411	1099	1103	984	1418	15912
Hemingford		1										1
Herston	2	2	2	2	1	2	3	3	2	5	4	28
Herzliya										1		1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Hessarek	1											1
Hidalgo		1					1	1				3
Hiduddify	2			1					1			4
Hillegersberg	1			1		1						3
Hillingdon			1					2				3
Hindmarsh	5	12	5	5		3	3					33
Hofit			1	2		1	1					5
Hoghton		1		1								2
Holcomb	1		2	3	5	5	3	3	3	3	8	36
Homosassa						1						1
Horsham	1			1		1				1	1	5
Huettwilen										1		1
Hull	2		3	3	5	8	1		1	2	2	27
Hvittingfoss	32	34	36	45	55	46	53	119	72	67	61	620
I 10:e,h:-										1		1
I 10:l,v:-										1		1
I 11:-:e,n,x									2			2
I 11:e,h:-		1										1
I 11:r:-	2						1	1	2	1	3	10
I 11:z10:-				1						1		2
I 13,22:-:1,6			1		1					2		4
I 13,22:b:-									2			2
I 13,22:z:-				1			2	2	4		1	10
I 13,23:-:1,5		1			2	1	2	5	8	3	4	26
I 13,23:-:1,6										1		1
I 13,23:-:e,n,z15										1		1
I 13,23:b:-	4	3	8	4	81	131	113	234	218	253	226	1275
I 13,23:c:e,n,z15						1						1
I 13,23:z:-									1	2		3
I 13,23;g,m,s,t:1,5										1		1
I 16:-:e,n,x								1				1
I 16:a:-								1				1
I 16:b:-								1	2	2		5
I 16:d:-						1	1	1		3	1	7
I 16:e,h:-	1						2			1		4
I 16:l,v:-			2		2				2	1		7
I 17:-:e,n,x									1			1
I 28:i:-				1				1		3		5
I 3,10:-:1,2										1		1
I 3,10:-:1,5									6	11	7	24
I 3,10:-:1,6					1	1				3		5
I 3,10:-:l,w									1			1
I 3,10:e,h:-				2				1		5	1	9

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
I 3,10:i:-								1				1
I 3,10:l,v:-				2	2		1	4	1	1	4	15
I 3,10:l,v:1,7										1		1
I 3,10:l,z13:-	1							1		1	1	4
I 3,10:r:-				3								3
I 30:b:-										2	1	3
I 35:m,t:-										1		1
I 38:k:-		1				2	1	4	2	1	3	14
I 4,[5],12:-:1,2	3	3	1	15	3	10	9	13	12	44	17	130
I 4,[5],12:-:1,5								1	2			3
I 4,[5],12:-:1,7					2			1		1	1	5
I 4,[5],12:-:e,n,x									1			1
I 4,[5],12:-:e,n,z15									1			1
I 4,[5],12:b:-	32	53	84	103	184	196	214	264	244	264	222	1860
I 4,[5],12:b:e,n,z15										1		1
I 4,[5],12:d:-				3	5	12	5	10	5	8	10	58
I 4,[5],12:e,h:-	2		2	5	5	4	2	2	11	18	10	61
I 4,[5],12:f,g,s:-									3	3		6
I 4,[5],12:i:-	553	752	884	1233	1273	943	991	1192	1339	1989	2418	13567
I 4,[5],12:l,v:-			1								2	3
I 4,[5],12:r:-	4	17	2	1		18	17	22	9	7	11	108
I 4,12,27:d:-								1				1
I 4,12,27:l,v:-								1				1
I 40:-:e,n,x		2								1		3
I 41:z4,z23:-											3	3
I 43:k:-				3								3
I 45:b:-				2		5	3	3	3	2	2	20
I 47:b:-							1					1
I 47:d:-									1	1		2
I 47:z4,z23:-		1		13	2	3	3	8	3	2		35
I 6,14:-:l,z13,z28				1								1
I 6,14:b:-		2		1	1	1						5
I 6,14:d:-								1				1
I 6,14:e,h:-	1											1
I 6,14:y:-									1			1
I 6,14:z4,z23:-										1		1
I 6,7:-:1,2							2				4	6
I 6,7:-:1,5	31	16	23	15	23	27	26	35	43	68	59	366
I 6,7:-:1,6	1						1	1	3	5		11
I 6,7:-:1,7								1		1		2
I 6,7:-:e,n,x							1	2	3	1		7
I 6,7:-:e,n,z15							2	2	3	2	5	14
I 6,7:b:-		1	1					3			1	6

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
I 6,7:c:-				1	2	1	1		1	4	6	16
I 6,7:c:1,5										1		1
I 6,7:d:-								3		2	2	7
I 6,7:e,h:-	1			2	1	2	4	14	11	30	22	87
I 6,7:i:-				1							1	2
I 6,7:k:-	5	3	3	17	6	7	18	19	25	26	20	149
I 6,7:l,w:-				1		3	1	2	5	1	1	14
I 6,7:r:-		1	1	2	1	7	2	10	14	27	11	76
I 6,7:y:-						3		4	2	11	3	23
I 6,7:z10:-									3	2	1	6
I 6,7:z10:e,n,z15										1		1
I 6,8,20:z4,z24:-				1								1
I 6,8:-:1,2	1		2	1	2	4	3	3	8	21	11	56
I 6,8:-:1,5			1		2			2		2	4	11
I 6,8:-:e,n,x	1								1		1	3
I 6,8:-:e,n,z15							1				1	2
I 6,8:b:-			1					1	1	1		4
I 6,8:d:-	1	1		1	9	5	8	9	8	14	15	71
I 6,8:e,h:-	2	3		2	3	6	7	9	15	13	14	74
I 6,8:i:-						1					2	3
I 6,8:l,v:-						1		1	1	1	2	6
I 6,8:r:-								1	1		1	3
I 6,8:y:-											1	1
I 6,8:z10:-						2			1	1	3	7
I 8,20:-:z6										1		1
I 8,20:i:-					1			1	1	1	2	6
I 9,12:-:1,2							1			1		2
I 9,12:-:1,5	1	1		3	4	6	10	12	13	22	19	91
I 9,12:-:1,6										1	1	2
I 9,12:-:e,n,x								1				1
I 9,12:a:-						3		1	3		6	13
I 9,12:e,h:-								1		5	3	9
I 9,12:g,z51:-				1				3		4	3	11
I 9,12:i,z28:-											5	5
I 9,12:l,v:-	1			2	1	6		1	4	2	2	19
I 9,12:l,z28:-	15	1	7	9	14	17	33	30	23	57	36	242
I 9,46:-:1,5										2		2
Ibadan	17	5	9	3	2	3		4		1		44
Idikan	1		1		2	3			3	2		12
II 1,9,12,46,27:l,z13,z28:z39										1		1
II 11:g,[m],s,t:z39			1									1
II 13,22:g,m,t:[1,5]										1		1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
II 13,22:z:-											1	1
II 13,22:z29:1,5	3							1				4
II 13,23:a:z42										1		1
II 13,23:b:[1,5]:z42								15	21	14		50
II 13,23:d:e,n,x						1						1
II 13,23:g,t:e,n,x								1				1
II 13,23:z:1,5										1		1
II 16:g,[m],[s],t:[1,5]									1		1	2
II 16:m,t:-								2	2		1	5
II 16:z35:e,n,x		1										1
II 16:z4,z23:-					1							1
II 17:b:-									1			1
II 17:g,t:-						1						1
II 17:g,t:[e,n,x,z15]											1	1
II 21:b:1,5	3											3
II 21:g,[m],[s],t:-					1	1			1			3
II 21:z10:[z6]				1	2	1	4	1		2	1	12
II 3,10:l,z28:1,5											1	1
II 30:b:z6								1				1
II 30:l,z28:z6		1	1	1		1	1			1	1	7
II 35:l,z28:-				1								1
II 35:z29:e,n,x	1											1
II 4,12,[27]:b:[e,n,x]	1	1										2
II 4,12:-:1,6		1										1
II 4,5,12:a:-									1			1
II 40:b:-											1	1
II 40:c:e,n,x,z15							1		1	1		3
II 40:z39:1,7				1								1
II 40:z4,z24:z39	1									1		2
II 41:z10:z6					1	1						2
II 42:b:e,n,x,z15			1									1
II 42:z:e,n,x,z15							1					1
II 44:z4,z23:-			1									1
II 47:b:1,5	5	1	8	2	4	4	1		1		3	29
II 47:b:e,n,x,z15				1	2		2	3	2	1	1	12
II 47:b:z6					1							1
II 47:d:1,5									1			1
II 48:a:z39							1		1	1		3
II 48:a:z6	1			1	1	1			1	2	1	8
II 48:b:z6	1											1
II 48:d:1,2		1										1
II 48:d:z6		1	1	2			2	1	1	1		9
II 48:z39:z81	1	2	1									4

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
II 50:b:z6	4	2	1	2	2	2	1	2	1		1	18
II 55:k:z39						1						1
II 58:c:z6				2	1					1	3	7
II 58:d:z6		1						1				2
II 58:l,z13,z28:1,5							1					1
II 58:l,z13,z28:z6		1	1	2	8	7	5	4		2	9	39
II 6,7:-:1,6									1			1
II 6,7:b:z42			1									1
II 6,7:m,t:-	1											1
II 6,7:z:1,5				1								1
II 6,7:z39:1,5,7	1											1
II 60:g,m,t:z6						1			1			2
II 9,12:a:1,5										1		1
II 9,12:b:-		1										1
II 9,12:d:e,n,x	1											1
II 9,12:g,m,[s],t:[1,5,7]:[z42]	2											2
II 9,12:g,m,s,t:e,n,x			1							1		2
II 9,12:g,s,t:e,n,x			1						1			2
II 9,12:l,w:e,n,x								1	1	1	1	4
II 9,12:m,t:-						1						1
II 9,12:z29:1,5									1	2		3
II 9,12:z39:1,7					1					1		2
II 9,46:m,t:e,n,x		1										1
IIIa 13,22:z4,z23:-				1	1				1	2	1	6
IIIa 13,23:g,z51:-				1		1		2	2	3	1	10
IIIa 13,23:z4,z23,[z32]:-						2		1				3
IIIa 13,23:z4,z24:-						1	6	1				8
IIIa 17:z29:-						1		1				2
IIIa 18:g,z51:-									1			1
IIIa 18:z36:-				1								1
IIIa 18:z4,z23:-	7	4	13	19	7	29	33	39	35	27	4	217
IIIa 18:z4,z32:-	2			1		2						5
IIIa 21:g,z51:-			2	2		2		2	1	1	1	11
IIIa 21:z29:-						2				1		3
IIIa 21:z36:-				1								1
IIIa 21:z4,z23:-							1			1		2
IIIa 21:z4,z32:-								1				1
IIIa 35:g,z51:-			1								1	2
IIIa 35:z29:-		1				1				1	1	4
IIIa 35:z4,z23:-			1	1	1	2	1	1		2		9
IIIa 35:z4,z32:-					2							2
IIIa 40:g,z51:-	2					2	1	2	3		1	11

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
IIIa 40:z36:-						1	1		1	1	1	5
IIIa 40:z4,z23:-				2		1	2	2		1	2	10
IIIa 40:z4,z24:-				1			1	1				3
IIIa 40:z4,z32:-										1		1
IIIa 41:z4,z23,z32:-						1	2	1	1			5
IIIa 41:z4,z23:-	2	11	6	11	13	17	10	13	19	14	8	124
IIIa 41:z4,z24:-							2	1				3
IIIa 41:z4,z32:-							2	1	1	1	3	8
IIIa 42:g,z51:-					1							1
IIIa 42:z4,z23:-				1	1			2			1	5
IIIa 42:z4,z24:-			1			1		1		2		5
IIIa 42;g,z51:-											2	2
IIIa 43:g,z51:-								1				1
IIIa 43:z29:-			1			1		2				4
IIIa 43:z4,z23:-							2		3	3		8
IIIa 43:z4,z24:-			1									1
IIIa 44:z4,z23,z32:-					1				1	1		3
IIIa 44:z4,z23:-		1				1			1			3
IIIa 44:z4,z24:-	1			2		2	1	1			1	8
IIIa 44:z4,z32:-						1	1	1	1			4
IIIa 45:z4,z23:-								1				1
IIIa 47:g,z51:-										2		2
IIIa 47:z4,z23:-				3		1		4	1	2		11
IIIa 48:g,z51:-	4	3	3	6	8	16	15	6	18	16	14	109
IIIa 48:z29:-				1	1							2
IIIa 48:z36:-				1			1		1			3
IIIa 48:z4,z23,z32:-							1					1
IIIa 48:z4,z23:-											1	1
IIIa 48:z4,z24:-	3		3	4	3	6	4	3	14	13	2	55
IIIa 50:g,z51:-									2		2	4
IIIa 50:z29:-							1					1
IIIa 50:z36:-						1					1	2
IIIa 50:z4,z23,z32:-											1	1
IIIa 50:z4,z23:-					3	1	2		1	1	1	9
IIIa 50:z4,z32:-				2								2
IIIa 51:g,z51:-					1	1				1	2	5
IIIa 51:z4,z23:-		2		1		1	1		1	2	3	11
IIIa 51:z4,z24:-	1					1						2
IIIa 51:z4,z32:-											1	1
IIIa 53:g,z51:-			1									1
IIIa 53:z4,z23,z32:-							1	1	1			3
IIIa 53:z4,z23:-		1	3	5		4	3	1	4	9	4	34
IIIa 53:z4,z24:-			1							1	1	3

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
IIIa 56:z4,z23:-			3	1	5	3	2	2	5	3	4	28
IIIa 59:z29:-	1											1
IIIa 59:z36:-	1											1
IIIa 63:z4,z23:-				2				1				3
IIIb (6),14:l,v:z									1			1
IIIb (6),14:z10:z							1					1
IIIb 11:k:z53			1								1	2
IIIb 11:l,[v],[z13]:z53				1								1
IIIb 13,23:z:1,5						2						2
IIIb 16:z10:e,n,x,z15	2	1			4	1	1		1	4	3	17
IIIb 17:i:z35										1		1
IIIb 17:l,v:e,n,x,z15	1											1
IIIb 17:z10:e,n,x,z15		1				1				1		3
IIIb 18:l,[v],[z13]:z		4					1					5
IIIb 21:l,v:z										1		1
IIIb 35:i:e,n,x,z15									1			1
IIIb 35:i:z				1								1
IIIb 35:k:e,n,x,z15				1			2					3
IIIb 35:k:z53						1						1
IIIb 35:l,[v],[z13]:z35	1					1	4		3			9
IIIb 35:l,[v],z13]:z35										1		1
IIIb 35:r:e,n,x,z15				1		1	1					3
IIIb 38:(k):-				1							1	2
IIIb 38:(k):1,5,7										2	2	4
IIIb 38:(k):z35	2			1	1	1		1		1	3	10
IIIb 38:i:z										1		1
IIIb 38:l,v:z53						2	1			1	2	6
IIIb 38:r:z			1									1
IIIb 42:(k):z35				1					2	1	1	5
IIIb 47:k:-							1	1		1		3
IIIb 47:k:z35		1		1	3	4		7	4	4	3	27
IIIb 47:k:z53						1		1				2
IIIb 47:r:z							1					1
IIIb 47:r:z53	1						1	1	1	3	1	8
IIIb 47:z10:z35					1			1				2
IIIb 48:-:z										1		1
IIIb 48:-:z35				1								1
IIIb 48:c:z	2					1				2		5
IIIb 48:i:-				1								1
IIIb 48:i:z	2	3	4	8	8	5	3	1	7	7	7	55
IIIb 48:k:z53								1		1	1	3
IIIb 48:l,v:z									1			1
IIIb 48:r:e,n,x,z15					1							1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
IIIb 48:r:z		1				1				2	3	7
IIIb 48:z:-										1		1
IIIb 48:z4,z24:-										1		1
IIIb 48:z52:z	1	1	1		1	1				1		6
IIIb 50:k:-										1		1
IIIb 50:k:z	6	3		1	1	3	8	7	15	9	12	65
IIIb 50:k:z35							1				1	2
IIIb 50:k:z53				2	1			1	1	1		6
IIIb 50:l,v:z						1	1		1			3
IIIb 50:l,v:z35		1				1		1	2			5
IIIb 50:r:-									1	1	1	3
IIIb 50:r:1,5,(7)						2						2
IIIb 50:r:z	1	3	1	10	3	7	3	7	4	7	7	53
IIIb 50:r:z35					1							1
IIIb 50:z:z52	1						2		1	1	3	8
IIIb 50:z52:z35	1	1		1	1	1		5	1	2		13
IIIb 53:-:z53										1		1
IIIb 53:k:e,n,x,z15				1								1
IIIb 53:k:z	1									1		2
IIIb 53:z10:z					1	2						3
IIIb 53:z10:z35			1	1	1	2	4	2	3	1	1	16
IIIb 53:z52:z53					1	1			3			5
IIIb 58:l,v:z35											1	1
IIIb 58:z52:z35		1										1
IIIb 60:r:-								1				1
IIIb 60:r:e,n,x,z15	4	4	1	4	2	3	10	5	5	1	4	43
IIIb 60:r:z	2	1				1		3	1	3		11
IIIb 60:z52:z							1					1
IIIb 60:z52:z35						1						1
IIIb 60:z52:z53				2	2		1	1	2	1	1	10
IIIb 61:-:1,5,[7]	2	1	2		6	1	3	21	11	1		48
IIIb 61:(k):z53								1				1
IIIb 61:c:-	1											1
IIIb 61:c:1,5,(7)						1	1					2
IIIb 61:c:z35	2	1	3	1	2	2	4	2	7	2	5	31
IIIb 61:i:z	1				2	1	1			2		7
IIIb 61:i:z35						1						1
IIIb 61:i:z53				1			1	1		1	3	7
IIIb 61:k:1,5,[7]	1		2	2	1		1	13	7			27
IIIb 61:l,[v],[z13]:1,5,[7]	2	2	1	11	13	8	23	16	17	17	16	126
IIIb 61:l,[v],[z13]:z35	3	1					1	1	2	1	2	11
IIIb 61:l,v:z			3									3
IIIb 61:r:z		1						1			3	5

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
IIIb 61:r:z53	1				1							2
IIIb 61:z52:z53	1	1	1	4	2	5		4	5	4		27
IIIb 65:(k):z						2	1	2		1	1	7
IIIb 65:(k):z35					1	1	1		1			4
IIIb 65:(k):z53					1		1	1	1	1		5
IIIb 65:c:z53											1	1
IIIb 65:l,v:z									1			1
IIIb 65:z10:e,n,x,z15				2		1				1		4
Ikeja								1				1
Ilala		1				1	1					3
Indiana	43	18	17	28	11	15	3	6	8	3	6	158
Infantis	570	588	506	491	540	639	633	813	910	1128	1342	8160
Inganda	2	1		1	2		2	2			2	12
Inpraw	1											1
Inverness	30	49	44	49	58	47	55	50	63	88	54	587
Irenea	1											1
Irumu	9	13	9	9	5	10	8	3	2	7	1	76
Isangi	4	3	4	1	4	5	1	1	1	3	5	32
Israel	2	1		1	4			1				9
Itami	8	7	10	1	1		1		1	1		30
Ituri		1	1	1	1	2	1	5			1	13
IV 11:g,z51:-						1			1			2
IV 11:z4,z23:-	1		1	3	2	1	1				3	12
IV 16:z4,z23:-			1									1
IV 16:z4,z24:-										1		1
IV 16:z4,z32:-	4	3	5	7	6	4	9	3	2		2	45
IV 18:z36,z38:-										1		1
IV 21:z4,z23:-			2							1		3
IV 21:z4,z32:-								1				1
IV 40:z4,z23:-						1					1	2
IV 40:z4,z24:-				1	2	1	1	2	2	1	3	13
IV 40:z4,z32:-			1	1	1		1				4	8
IV 41:z4,z23:-										1		1
IV 43:z36,z38:-		1										1
IV 43:z4,z23:-	3	7	1	4	1	2	3	5	2	5	4	37
IV 43:z4,z32:-			1				1			1		3
IV 44:z36,[z38]:-	2	1			1	1	1	6	6		3	21
IV 44:z4,z23:-	14	7	16	11	8	11	7	13	10	4	11	112
IV 44:z4,z24:-		2	1				4	2	3	1	4	17
IV 44:z4,z32:-		1	5	7		4	5		5	4	5	36
IV 45:g,z51:-	8	8	8	7	13	10	10	2	1	5	6	78
IV 45;g,z51:-											1	1
IV 48:g,z51:-	30	13	5	11	31	11	20	16	11	14	10	172

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
IV 48:z4,z23:-	2											2
IV 48:z4,z24:-					1							1
IV 48:z4,z32:-	1	1		3	15	2	1	2		2	3	30
IV 50:g,z51:-	9	9	7	16	8	9	11	13	12	16	29	139
IV 50:z4,z23:-	6	7	6	64	89	42	22	9	9	16	11	281
IV 50:z4,z24:-											1	1
IV 50:z4,z32:-				2	1		3					6
IV 51:z4,z23:-								1				1
IV 53:z4,z23:-									1			1
IV 6,7:z4,z23:-	1											1
IV 6,7:z4,z24:-	8	2		1			6	1	5		1	24
Jaffna					1							1
Jamaica						1				3		4
Jangwani		4	4		8	2	5		2		3	28
Javiana	1718	1776	1324	1433	1331	2138	1997	3020	2937	2890	2304	22868
Jedburgh			1									1
Jericho			1									1
Jerusalem	1			1								2
Joal	2	4			1							7
Jodhpur		1				1						2
Johannesburg	17	40	44	22	38	29	51	40	68	50	44	443
Jos			2									2
Jubilee		1		1								2
Jukestown				1						1	1	3
Kaapstad	2	1						1		1		5
Kaduna			1								3	4
Kalamu				1			2					3
Kalina			1									1
Kallo				1								1
Kambole	1											1
Kampala							1				1	2
Kanifing							1					1
Kapemba		1		1								2
Kedougou		3	4	4	1	2	2			2	8	26
Kentucky	59	56	81	123	96	93	73	94	101	114	94	984
Kiambu	84	31	53	65	34	81	91	69	90	41	60	699
Kibi									2			2
Kimberley			1									1
Kimuenza			1	1	1				1			4
Kingabwa	4	7	11	4	8	6	6	4		6	6	62
Kingston		1	1		2	5	1	2	1		1	14
Kintambo	10	16	5	15	8	13	10	5	10	11	11	114
Kirkee				2								2

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Kisangani			2	1		1	1	1	2	1		9
Kisarawe		1	1		3	1	2	2	3	2	1	16
Kisii					1	1						2
Kivu				1					2			3
Koketime						3					1	4
Kokomlemle	1	2	1	2	3	2	2	4	6			23
Korlebu				1								1
Kortrijk				1								1
Kottbus	8	8	8	15	13	18	5	9	13	5	7	109
Kotu		1	4									5
Kouka							5					5
Krefeld	1		1			2	2			2		8
Kua	3	2			1	3	1	1	1	2	2	16
Kumasi						2		1				3
Kunduchi						1						1
Kuru								1				1
Labadi						1						1
Lagos	1	2		1	4	1	1	3	4	3		20
Landwasser						3						3
Lansing		2			1		3					6
Larochelle	4	6	2	2	3	4	2	2	1	2	5	33
Lattenkamp			1		1	3	3	1	3	1	2	15
Lawndale										1		1
Lawra								1			2	3
Leeuwarden	1											1
Leiden											1	1
Lerum										1		1
Lexington		5	1	2	4	1	2	6	3	1		25
Lika	4											4
Lille		1			1					3	3	8
Limete			1	1		3						5
Lindenburg	3	2	4	3	2	3	1	1	2	1		22
Litchfield	172	160	141	208	241	342	264	199	231	223	205	2386
Liverpool	1	3	4	2	3	5	14	12	8	8	12	72
Livingstone	2	3	7	9	9	7	18	20	15	12	21	123
Llandoff	1											1
Loanda	1	2	2	2	3		1					11
Lockleaze			1	2	1			1				5
Lomalinda	12	15	18	20	12	15	18	31	21	30	40	232
Lome	1					1	1	1		3	3	10
Lomita	6	4			1	4	1	1	1			18
London	45	28	30	37	176	26	20	31	27	34	26	480
Loubomo									1			1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Louga	1											1
Louisiana											1	1
Lowestoft	1											1
Luciana	4	4	4	3	9	5	5	3	4	7	4	52
Luke									1	1	1	3
Macallen					1							1
Macclesfield										1		1
Madelia	6	6	6	11	11	9	20					69
Madison						1						1
Madras			1								1	2
Magwa										1		1
Malika			1									1
Malstatt			2									2
Manchester	1					1					1	3
Mango										1		1
Manhattan	54	80	58	79	55	106	78	92	82	83	69	836
Mapo	1											1
Mara			1									1
Marburg	1											1
Maricopa						3		1				4
Massenya	1											1
Matadi	4	2	2		2	2		2	1	1	1	17
Matopeni				3	1	1		1		3	1	10
Maumee		1			1		4					6
Mbandaka	173	164	190	241	231	225	215	251	188	176	232	2286
Meleagridis	14	8	12	20	27	9	16	13	16	21	13	169
Memphis		2		1						1	1	5
Menden				1				1				2
Mendoza	1	8	2									11
Menston	2			1	1	1			2	2		9
Mgulani	1			2	1		1		2	1		8
Miami	66	103	82	64	97	91	109	152	105	89	129	1087
Michigan	2	6	1	4	7	3	6	5	2	2	4	42
Mikawasima	4	1	1	6	2	1	1	1	1	4	1	23
Mim		1										1
Minnesota	25	35	55	57	34	21	27	18	22	25	18	337
Mississippi	451	558	566	604	472	434	445	475	549	655	484	5693
Mkamba		1										1
Molade	2		2	3	2	2	2	2	1	1	2	19
Mons						1						1
Monschaui	13	21	14	10	11	13	21	23	15	15	45	201
Montaigu									1			1
Montevideo	890	874	809	1061	1003	1094	1264	1067	1196	1206	913	11377

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Montreal			1						1			2
Morehead						2						2
Mornington				1								1
Morotai		1										1
Moscow				1								1
Mountpleasant	1		1		1	1					1	5
Mowanjum						1						1
Mpouto							1					1
Muenchen	798	749	739	766	999	890	819	833	984	1043	969	9589
Muenster	79	61	94	96	72	72	48	44	50	52	88	756
Mundonobo			1									1
Nagoya	1		2	2								5
Napoli		1	6	3	1	1	2	2	6	5	4	31
Narashino			1						1		1	3
Nchanga	2			1	1					24	1	29
Nessziona		1	1	3	1				1			7
Neudorf				1	1							2
Neukoelln		1								1		2
Newholland			2					1		1		4
Newmexico	10	3	3	2	1	8	5	4		5	3	44
Newport	4042	3361	3327	3402	3653	3846	3833	5067	5211	5122	3811	44675
Newrochelle										1		1
Newyork					1						2	3
Nieukerk	1											1
Nigeria	1	2			1	1	3				1	9
Nima	2	5	8	15	8	11	5	4	7	9	13	87
Nitra	2				1		1		1			5
Norwich	121	106	91	119	118	135	120	156	197	183	135	1481
Nottingham	11	1	4	2	4	3	2	2	2	1	4	36
Nyanza		1			1		1	1				4
Nyborg	1				1							2
Oakland	3				1	5	1	2		1		13
Obogu	2							3	1			6
Offa			1	1	2	2	4	3			2	15
Ohio	49	74	88	68	50	38	56	61	65	45	62	656
Ohlstedt		1										1
Okatie	4			2						4	1	11
Oldenburg	1				1							2
Onderstepoort	2			1								3
Onireke							2	1	1			4
Ontario									1			1
Oranienburg	600	497	595	728	695	656	900	663	721	760	699	7514
Orientalis	8	2				3	1				1	15

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Orion	5	5	2	5	7	3		2	4	7	3	43
Oritamerin		3	2	1					2			8
Os				1								1
Oskarshamn					1							1
Oslo	21	25	30	23	20	38	32	31	24	31	31	306
Othmarschen	17	23	20	11	16	16	12	3	8	4	4	134
Ouakam	1			4					3	2		10
Overschie	2		3	3	2	2	1		1		5	19
Oxford		1		1								2
Oyonnax			2									2
Panama	184	150	149	199	177	174	159	195	181	172	163	1903
Papuana						3			1	1		5
Paratyphi A	110	145	121	182	191	140	179	188	182	150	143	1731
Paratyphi B	215	237	105	138	151	85	46	92	82	54	44	1249
Paratyphi B var. L(+) tartrate+	342	354	460	417	412	477	436	451	431	517	327	4624
Paratyphi C		2	1	1	1				2			7
Penarth				1								1
Pensacola	2	4	14	13	12	12	9	15	25	23	14	143
Pharr							1			2		3
Ploufragan									1			1
Plymouth			4	2	1	1	1					9
Poano	9	6	6	5	2		3	4	6	1	2	44
Poitiers			1									1
Pomona	68	70	68	91	65	87	80	49	73	73	57	781
Poona	211	234	196	204	251	508	238	271	277	282	305	2977
Portland		1		2		1				1	2	7
Potengi						1						1
Potsdam	9	4	4	18	17	23	31	16	21	26	18	187
Powell				1								1
Praha	1		1	1	1	1	1	3		1	1	11
Pramiso											1	1
Preston						1		1				2
Putten	12	4	9	2	5	10	25	5	12	4	7	95
Quiniela		2						1				3
Reading	90	74	55	51	58	46	53	34	43	58	57	619
Rechovot	1											1
Redlands	1			1						1		3
Remo		1		2	1		1					5
Rhone					1							1
Richmond	6	6	8	9	12	2	8	14	5	12	9	91
Ridge					1					2		3
Riggil								1			1	2

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Rissen	7	7	6	18	11	30	127	16	24	30	36	312
Rittersbach	1											1
Riverside			1			1					2	4
Romanby	1	1	3	1	1	1	2	1				11
Roodepoort	6	3	3	9	1		2	1	1	1	4	31
Rovaniemi				1								1
Rubislaw	103	104	100	96	129	120	89	145	180	141	187	1394
Ruiru			1									1
Saarbruecken				3		1		3		1		8
Saintemarie		1			1	1						3
Saintpaul	838	695	685	588	520	1831	854	890	709	779	1031	9420
Salford				1		1						2
Sandiego	126	112	139	221	200	133	142	156	142	196	192	1759
Sangalkam		1										1
Sangera							1		5			6
Sanjuan				1	1							2
Sanktgeorg				2								2
Sao											2	2
Sapele										1		1
Saphra	12	4	5	1	1	7	2	3	2	7	4	48
Saugus											4	4
Schwarzengrund	181	148	139	174	307	333	348	395	264	291	255	2835
Schwerin			1									1
Sekondi	1											1
Selby		1										1
Senegal	1								2	1	1	5
Senftenberg	99	104	112	113	168	206	155	128	133	144	232	1594
Seremban		2	1					1				4
Serrekunda											1	1
Shipley		2		1	1							4
Shubra	3	2	2	3	2	12	5	3		5		37
Simi				2	1							3
Singapore	2	10	5	7	8	13	9	7	9	10	7	87
Sinstorf	2	1		1		1			1		1	7
Skansen											1	1
Soahanina			1									1
Soerenga	1	3	1	3	7	5	5	4	4	5	4	42
Solt										1	1	2
Somone				1								1
Southbank						1						1
Spalentor		2										2
Splott			1					1				2
Stachus		1	1		1							3

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Stanley	227	189	224	315	258	218	165	233	210	215	184	2438
Stanleyville	3	6	7	5	6	10	9	4	5	7	3	65
Stellingen	1	1								1		3
Sternschanze					1							1
Stockholm			1		1							2
Stoneferry	1	1					1					3
Stormont	1								1			2
Stourbridge			1									1
Strasbourg		1										1
Stuttgart										1		1
Suberu	1		1	1								3
Suelldorf	2	1		1	2	1	3		1	2	5	18
Sundsvall	11	6	9	3	3	6	3	2	5	3	3	54
Tabligbo			1		1							2
Takoradi	6	5		4	1	5	6	2	4	3	1	37
Tallahassee	8	3	7	11	7	4	5	6	2	4	10	67
Tamberma				1					1			2
Tanger	2											2
Tanzania				1								1
Tarshyne								1			2	3
Teddington									2			2
Tees								2				2
Teko											1	1
Telelkebir	21	29	45	53	68	28	26	28	16	23	24	361
Teltow	1											1
Tennessee	42	57	132	311	616	125	65	32	29	30	37	1476
Tennyson									1			1
Texas			1					2	1			4
Thompson	509	495	428	447	414	412	478	482	536	825	634	5660
Tiko					1							1
Tilene	4		1	1			1	1	1		2	11
Tokoin	2		1					2				5
Tornow	2	3		1				2				8
Toucra	2	3	2	1				1		1	1	11
Trachau	1											1
Travis		2					1					3
Treguier				1								1
Tripoli		2										2
Troy								1				1
Tschangu							1					1
Tsevie										3		3
Tshiongwe	2	1	4	3				2				12
Tucson		1	4		4	2	4	2	2	1	2	22

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Typhi	362	306	350	413	450	478	432	479	383	366	365	4384
Typhimurium	6770	6855	6987	6866	6279	6524	6120	6129	6131	5737	5853	70251
Tyresoe		1		1		1						3
Uccle	1					1	1		1	2	1	7
Uganda	61	46	47	59	73	67	51	73	84	102	154	817
Ughelli			2									2
Umbilo				1					1		3	5
Umhlatazana										1		1
Uppsala		1		1	4				4			10
Urbana	60	59	44	36	65	53	40	38	67	60	43	565
Utah						1		1		1		3
Uzaramo	3	5		2		4	3					17
V 48:b:-											1	1
V 48:z81:-										1		1
Valdosta		2			3							5
Vancouver					2	1		1			1	5
Vanier										1		1
Vejle	3	4	1				1	1				10
Victoria						1		1		1		3
Vinohrady				1				1				2
Virchow	78	79	82	78	77	107	83	99	76	134	68	961
Vitkin					1						1	2
Vleuten						1						1
Volkmarsdorf		1										1
Vuadens						1						1
Wa					1							1
Wagenia	1						1				1	3
Wandsworth	6	2	3	7	69	6	4	6	5	3	7	118
Wangata		3	3		2	3			1		1	13
Waral	2							1				3
Warmsen					1							1
Warnow	1											1
Washington	1											1
Waycross	2	2	5	2		3	6	1	3		1	25
Wedding									1			1
Welikade		1				1	1				2	5
Weltevreden	71	96	92	95	83	90	73	80	56	77	63	876
Wentworth		4										4
Wernigerode			1								1	2
Weslaco	1		2		1				3			7
Westeinde			1									1
Westhampton	8	6		3	7	3	2		1		6	36
Weston	1											1

Serotype	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Wichita	1											1
Widemarsh	4	1		2	2	6	4	3	3	32	13	70
Wien				3	2		2		2		2	11
Wil		1										1
Willamette		1										1
Wimborne										1		1
Windermere										1		1
Winneba		1										1
Winston								3	1			4
Woodinville	2					1		1	1		1	6
Worthington	17	34	21	33	18	38	29	31	27	56	32	336
Wyldegreen										1		1
Yaba			1									1
Yehuda	1											1
Yoruba	1			1						3		5
Zaiman					1	1						2
Zanzibar	2		1			3						6
Zaria									1			1
Zega			2								1	3
Zerifin		3										3
Zwickau				1							1	2
Partially serotyped	1562	1460	1666	1437	1187	1592	1101	1340	1603	1727	1388	16063
Rough, mucoid, and/or nonmotile isolates	54	61	41	109	101	128	133	233	219	333	221	1633
Unknown	3407	1856	1113	3718	3845	5569	3523	4095	4173	5688	5853	42840
Total	**37442**	**35661**	**36214**	**40323**	**39970**	**45182**	**40828**	**46339**	**45828**	**48998**	**45735**	**462520**

Appendix 3b. Partially serotyped laboratory-confirmed *Salmonella* infections reported to CDC by serogroup and year, 2003–2013[2]

Serogroup	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Group O:11	1	10	35	20	4					2	4	76
Group O:13	1	11	22	15	10	15	11	11	16	23	17	152
Group O:16	2	1	7	10		2	2	2	2		1	29
Group O:17	1		1	5			2				1	10
Group O:18	2		2	2						3		9
Group O:21			5	3								8
Group O:28		4	8	5	1			1				19
Group O:30			5	2	1	1			2	1	2	14
Group O:35				1	1			2	4	1	2	11
Group O:38				5	1	1	1					8
Group O:39				3				1	3	2		9
Group O:40	1	1	4	6					3		2	17
Group O:41	1			1								2
Group O:42						1						1
Group O:43			1	1							2	4
Group O:44	5	4	1		1			1			2	14
Group O:45	1	2		1	1			1				6
Group O:47			1	2	1					1		5
Group O:48	5	1	18	2	1	2	1		1		1	32
Group O:50	4	18	114	47	2		1	1	1	2	2	192
Group O:58	1							1				2
Group O:6,14	1		2			1	1	1				6
Group O:60							1					1
Group O:65						1						1
Subspecies I, Group A	4	1	2	7	7	4	7	9	2	5	3	51
Subspecies I, Group B	444	393	463	524	355	556	379	366	522	521	516	5039
Subspecies I, Group C1	160	141	134	201	194	301	154	206	230	297	237	2255
Subspecies I, Group C2	213	151	191	103	88	120	84	164	202	236	136	1688
Subspecies I, Group D1	257	269	283	200	109	96	73	207	204	299	238	2235
Subspecies I, Group D2	1	3	5					4				13
Subspecies I, Group E1	39	35	35	16	17	16	10	12	23	21	13	237
Subspecies I, Group E4	9	6	7	9	2	2	1	2	2			40
Subspecies I, Group O:11				1								1
Subspecies I, Group O:13				4								4
Subspecies I, Group O:35							1					1
Subspecies I, Group O:38			1	1								2
Subspecies I, Group O:40				1								1
Subspecies I, Group O:47				1								1
Subspecies I, Group O:48	2					1						3

[2]The Pasteur Institute publishes the official list of known *Salmonella* serotypes and their respective serogroups. The document can be found at http://www.pasteur.fr/ip/portal/action/WebdriveActionEvent/oid/01S-000036-089

Serogroup	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Subspecies I, Group O:51				1								1
Subspecies IIIa, Group O:13	1			1								2
Subspecies IIIa, Group O:40				1				1				2
Subspecies IIIa, Group O:41							1					1
Subspecies IIIa, Group O:48				1								1
Subspecies IIIa, Group O:50								1				1
Subspecies IIIa, Group O:51						2						2
Subspecies IIIb, Group O:35	1	1	1									3
Subspecies IIIb, Group O:38	2	1	4									7
Subspecies IIIb, Group O:42			1									1
Subspecies IIIb, Group O:47	1		3	17				1		1		23
Subspecies IIIb, Group O:50				1						1		2
Subspecies IIIb, Group O:53						1						1
Subspecies IIIb, Group O:60				1			1					2
Subspecies IIIb, Group O:61				1	2	1		1		1		6
Subspecies IIIb, Group O:65			1		1	1						3
Subspecies IV, Group O:40								1				1
Subspecies IV, Group O:43				1								1
Subspecies IV, Group O:50				2								2
Total	**1160**	**1053**	**1357**	**1226**	**799**	**1125**	**731**	**997**	**1217**	**1417**	**1179**	**12261**

Appendix 4. *Salmonella* serotypes affected by naming convention changes in 2012[3]

Previous Designation	Combined With
Amager var 15+	Amager
Amersfoort var. 14+	Amersfoort
Amsterdam var. 15+	Amsterdam
Anatum var. 15+	Anatum
Anatum var. 15+, 34+	Anatum
Bardo	Newport
Bargny	Takoradi
Bazenheid	Zerifin
Butantan var. 15+	Butantan
Cerro var. 14+	Cerro
Duesseldorf	Albany
Ferruch	Kottbus
Give var. 15+	Give
Give var. 15+, 34+	Give
Haardt	Blockley
Inchpark	Alagbon
Istanbul	Hadar
Konstanz	Gatuni
Korbol	Nagoya
Lexington var. 15+	Lexington
Lexington var. 15+, 34+	Lexington
Lille var. 14+	Lille
Livingstone var. 14+	Livingstone
London var. 15+	London
Mbandaka var. 14+	Mbandaka
Meleagridis var. 15+	Meleagridis
Muenster var. 15+	Muenster
Muenster var. 15+, 34+	Muenster
Nchanga var. 15+	Nchanga
Nyborg var. 15+	Nyborg
Ohio var. 14+	Ohio
Oranienburg var. 14+	Oranienburg
Orion var. 15+	Orion
Orion var. 15+, 34+	Orion
Oxford var. 15+, 34+	Oxford
Pakistan	Litchfield
Paris	Mapo
Presov	Shipley
Rissen var. 14+	Rissen
Santiago	Belem
Stockholm var. 15+	Stockholm

[3]More details about the naming convention changes can be found at http://www.cdc.gov/ncezid/dfwed/pdfs/salmonella-annual-report-2012-508c.pdf.

Previous Designation	Combined With
Sunnycove	Daarle
Tananarive	Brunei
Thompson var. 14+	Thompson
Typhimurium var. 5-	Typhimurium
Uganda var. 15+	Uganda
Vejle var. 15+	Vejle
Virginia	Muenchen
Weltevreden var. 15+	Weltevreden
Westhampton var. 15+	Westhampton
Westhampton var. 15+, 34+	Westhampton
Wippra	Molade
Yovokome	Manhattan
I 4,[5],12:b:- var. L(+) tartrate+	I 4,[5],12:b:-

References

1. Centers for Disease Control and Prevention (CDC). National *Salmonella* Surveillance Overview. Atlanta, Georgia: US Department of Health and Human Services, CDC, 2011.
2. Ryan CA, Nickels MK, Hargrett-Bean NT, et al. Massive outbreak of antimicrobial-resistant salmonellosis traced to pasteurized milk. JAMA. 1987 Dec 11;258(22):3269-74.

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