

## Salmonellosis, Typhoid Fever and Paratyphoid Fever

In 2018, 979 cases of salmonellosis (non-typhoidal) were reported (incidence rate 19.6/100,000); 31.4% were associated with international travel. *Salmonella* infection continues to be the second most commonly reported enteric disease in BC. The *Salmonella* incidence in 2018 continues to decrease as it has been since 2015. Although the incidence rates are decreasing, they are still higher than was reported prior to 2006. This is mainly due to the ongoing *S. Enteritidis* outbreak. Since May 2017, whole genome sequencing has been done on all human cases of salmonellosis. This lab typing method has been useful for identifying the most common strains of *Salmonella* circulating in BC and has improved our ability to detect and has led to a greater number of solved outbreaks (BCCDC, 2018<sup>1</sup>).

Rates were highest in children under five years of age and among residents of Northwest, Northern Interior and East Kootenay HSDA. Cases were reported throughout the year.

The incidence rate of typhoid fever (0.8/100,000) and paratyphoid fever (0.5/100,000) remained stable. The majority of cases were associated with international travel (89.5% of typhoid fever and 76.2% of paratyphoid fever, with South Asia being the most common travel location reported. Typhoid cases clustered in the first third of the year and paratyphoid fever cases clustered at the beginning and end of the year, a temporal reflection of the travel patterns of BC residents. Most cases (73.0%) were reported from Fraser Health Authority. The highest incidence of typhoid fever and paratyphoid fever was in children and adults aged 20-29 years.

*S. Enteritidis*, *S. Infantis* and *S. Typhimurium* were the most commonly reported *Salmonella* serotypes in 2018. *S. Enteritidis* accounted for 42.4% of the salmonellosis cases in BC, which is a slight decrease compared to previous years. *S. Enteritidis* continues to be the dominant serotype of *Salmonella* in BC and has been for over a decade. The most notable shift was *S. Infantis* reported as the second most common serotype in BC. This was due to a national outbreak where cucumbers were the likely source of illness (PHAC, 2018<sup>2</sup>). *S. Heidelberg* was not reported in the top 10 for the second consecutive year.

There were 7 *Salmonella* outbreaks in 2018, including four *S. Enteritidis* outbreaks, 1 *S. Brandenburg*, 1 *S. Newport* and 1 *S. Infantis*. All were foodborne and six were solved. Chicken meat was identified as the source in five of them of which 4 were frozen, breaded chicken products (see [Enteric Outbreak section](#)).

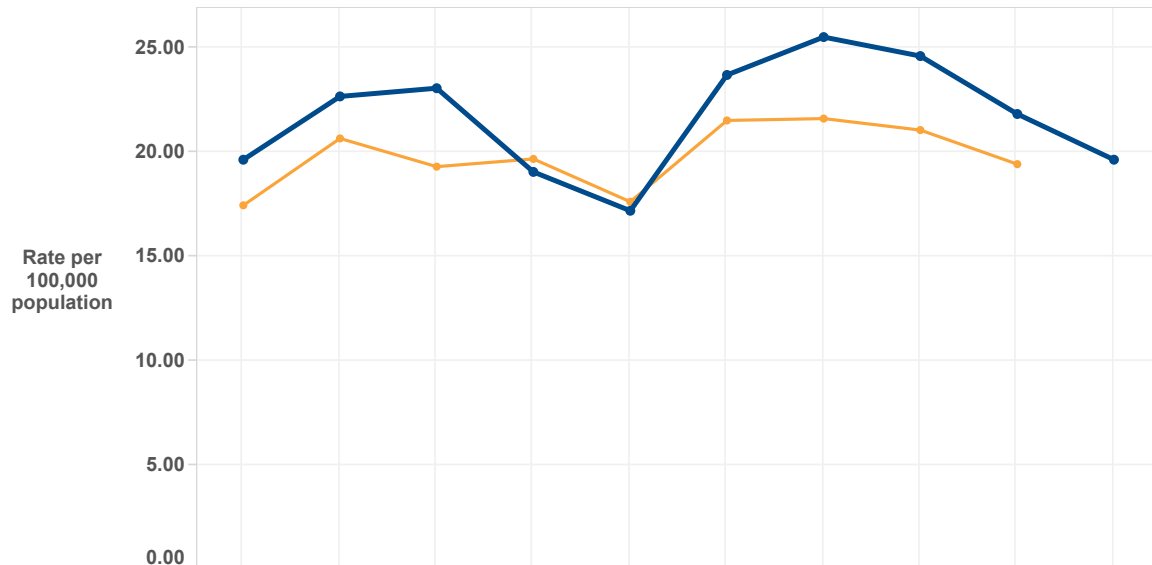
Additional analyses comparing *Salmonella* human and food chain surveillance data are available through the BC Integrated Surveillance of Foodborne Pathogens program ([www.bccdc.ca/integratedfoodchainsurveillance](http://www.bccdc.ca/integratedfoodchainsurveillance)).



1. BCCDC 2018. Epidemiological Experience and Public Health Impact of Enteric Pathogen Sequencing. Available at: <http://mediasite.phsa.ca/Mediasite/Showcase/BCCDC/Presentation/0dc251c62aed48698564748bda7cd7461d>

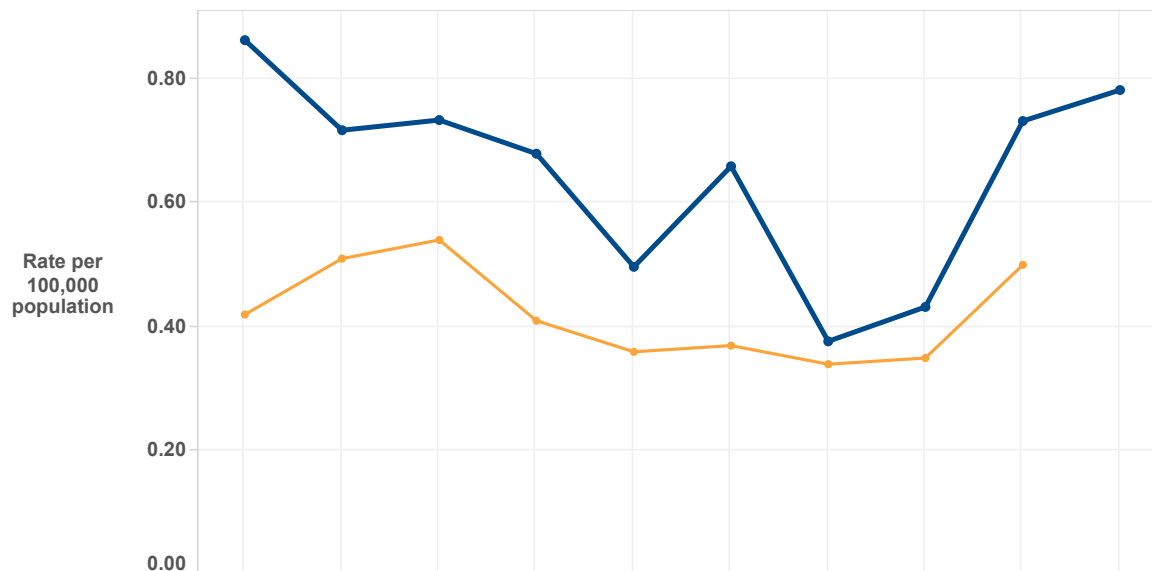
2. PHAC, 2018. Available at: <https://www.canada.ca/en/public-health/services/public-health-notices/2018/outbreak-salmonella-infections-under-investigation.html>

### 10.1 Salmonellosis (non-typhoidal) by Year, 2009-2018



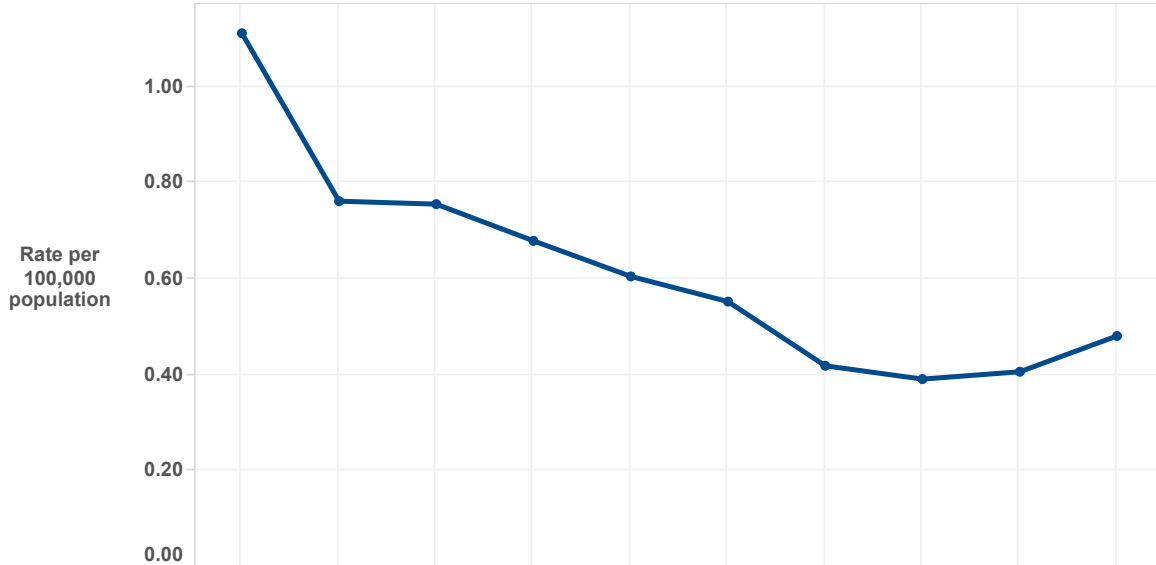
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Reports	865	1,011	1,037	869	795	1,114	1,217	1,194	1,073	979
BC Rate	19.61	22.64	23.03	19.03	17.17	23.67	25.48	24.57	21.80	19.61
Canada Rate	17.43	20.63	19.28	19.65	17.60	21.49	21.58	21.03	19.40	

### 10.2 Salmonella Typhoid Fever Rates by Year, 2009-2018



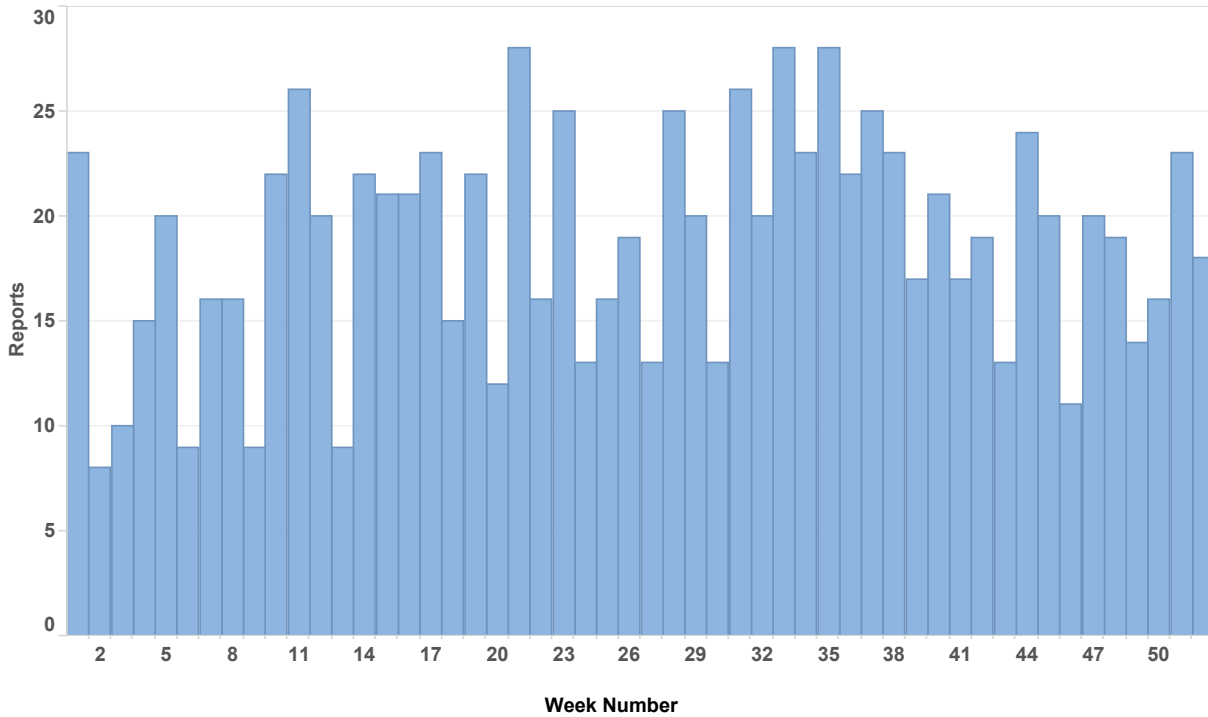
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Reports	38	32	33	31	23	31	18	21	36	39
BC Rate	0.86	0.72	0.73	0.68	0.50	0.66	0.38	0.43	0.73	0.78
Canada Rate	0.42	0.51	0.54	0.41	0.36	0.37	0.34	0.35	0.50	

10.3 *Salmonella Paratyphoid Fever Rates by Year, 2009-2018*

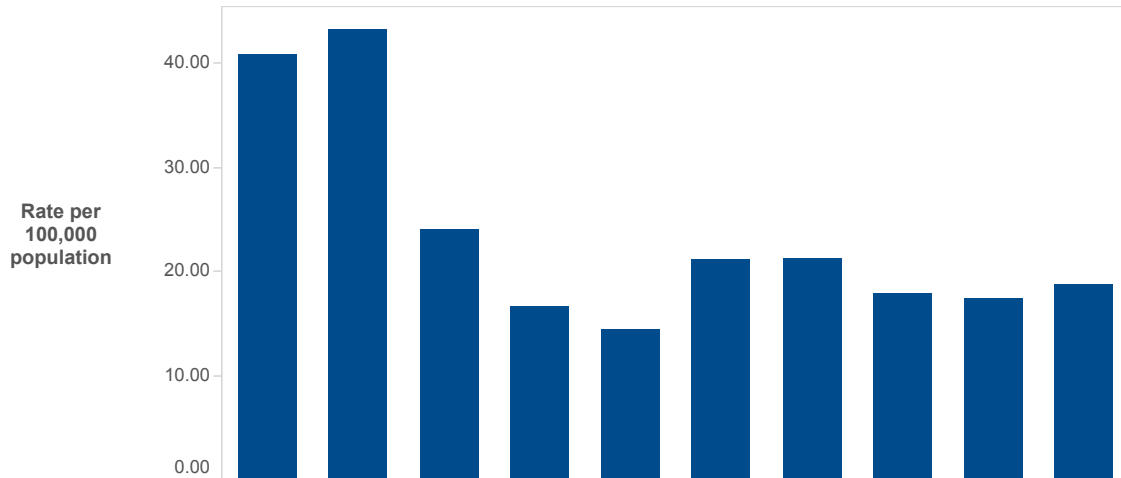


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Reports</b>	49	34	34	31	28	26	20	19	20	24
<b>BC Rate</b>	1.11	0.76	0.76	0.68	0.60	0.55	0.42	0.39	0.41	0.48

10.4 *Salmonellosis (non-typhoidal) Reports by Week, 2018*

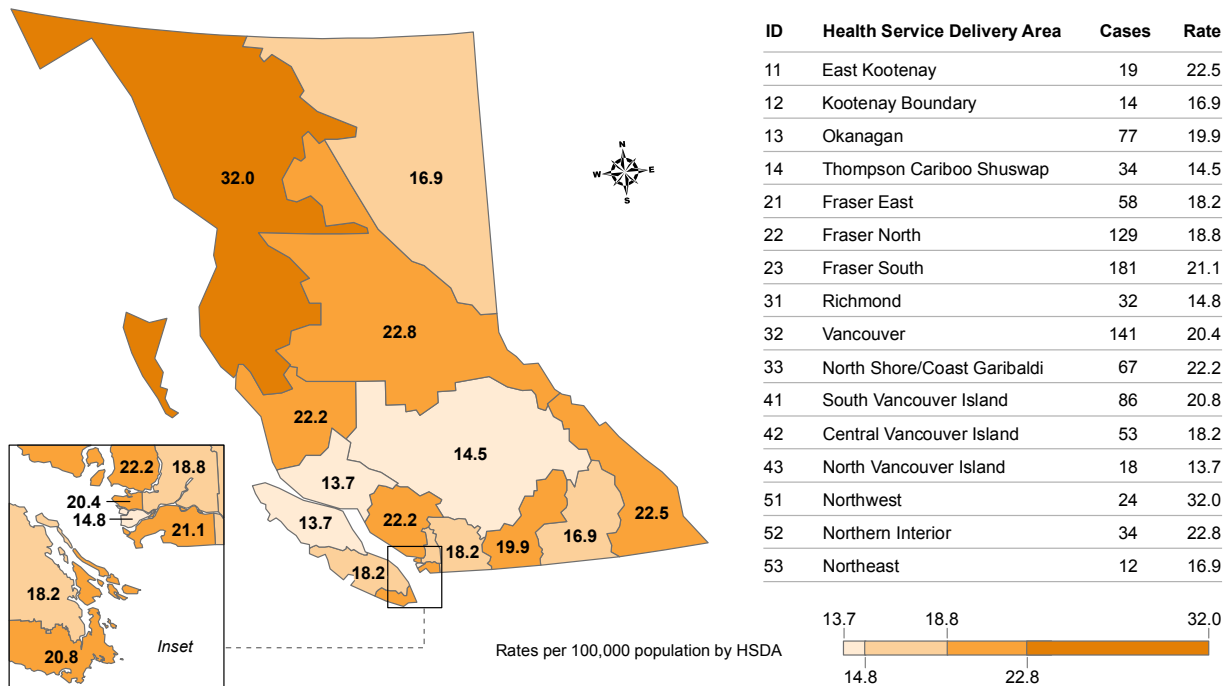


### 10.5 Salmonellosis (non-typhoidal) Reports by Age Group, 2018



		<1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+
Reports	Female	11	30	23	17	18	36	36	55	125	134
	Male	7	50	35	23	22	33	38	69	114	102
	<b>Total</b>	<b>18</b>	<b>80</b>	<b>58</b>	<b>40</b>	<b>40</b>	<b>69</b>	<b>74</b>	<b>124</b>	<b>239</b>	<b>237</b>
BC Rate	Female	51.26	33.71	19.58	14.32	13.32	23.19	21.21	15.93	17.75	20.16
	Male	30.80	52.18	28.34	18.80	15.35	19.29	21.32	19.84	17.00	17.12
	<b>Total</b>	<b>40.74</b>	<b>43.28</b>	<b>24.07</b>	<b>16.59</b>	<b>14.37</b>	<b>21.15</b>	<b>21.26</b>	<b>17.89</b>	<b>17.39</b>	<b>18.81</b>

### 10.6 Salmonellosis (non-typhoidal) Rates by HSDA, 2018



10.7 *Salmonella* Serotype Distribution, 2018

Rank	Serotype	Number of Cases	Proportion
1	Enteritidis	447	42.4%
2	Infantis	76	7.2%
3	Typhimurium	58	5.5%
4	Typhi	43	4.1%
5	<i>Salmonella</i> ssp   4,5,12:i:	34	3.2%
6	Newport	28	2.7%
7	Paratyphi A	20	1.9%
8	Stanley	19	1.8%
9	Paratyphi B var. java	17	1.6%
10	Javiana	16	1.5%
	Other	296	28.1%
	Total	1054	100.0%

Note: Serotype distribution is based on BCCDC PHL data. Numbers may vary from those reported in Panorama.