

Figure S1. (A) Distribution and densities of primary livestock and people in counties of southwestern Alberta. The size of the pie chart represents the relative densities of animals. Livestock data was obtained from the 2011 Census of Agriculture for Alberta [1], and densities of people were obtained from the 2011 Municipal Affairs Population List [2]. (B) Agricultural production areas, and densities of cattle and chicken farms in Canada. Cattle farms include beef cattle and dairy confined feeding operations, as well as cow-calf farms. Data was obtained from Statistics Canada [3].

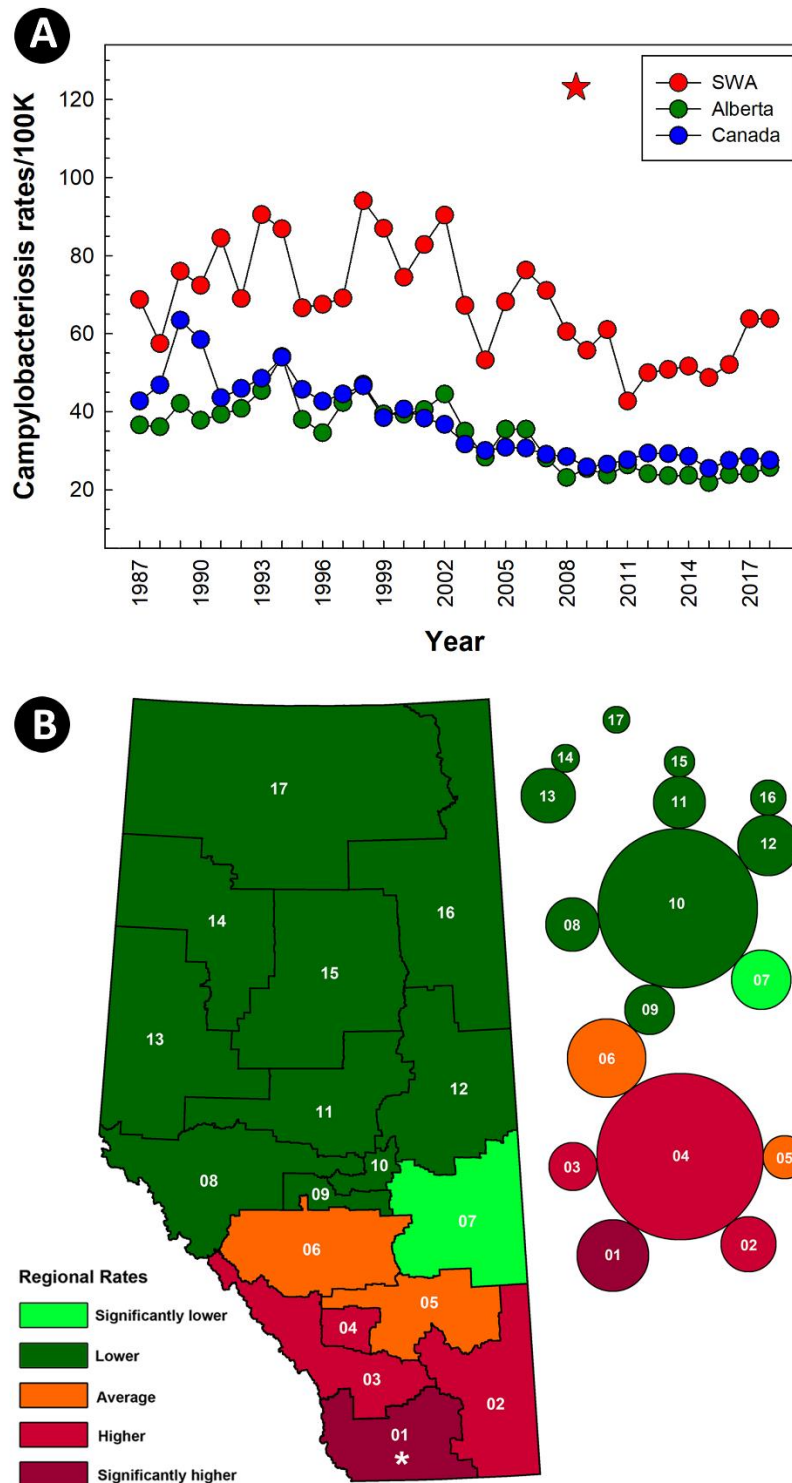


Figure S2. (A) Campylobacteriosis rates incited by *Campylobacter jejuni* from 1987 to 2018 in Canada [4], Alberta, and southwestern Alberta (SWA). The star indicates rate of campylobacteriosis determined by enhanced detection [5]. (B) Regional rates of campylobacteriosis 2004-2006 [6], and cartogram (right) showing the relative human population size within each of the 17 health regions in Alberta. The Asterisk indicates the SWA study location (i.e. health region 01).

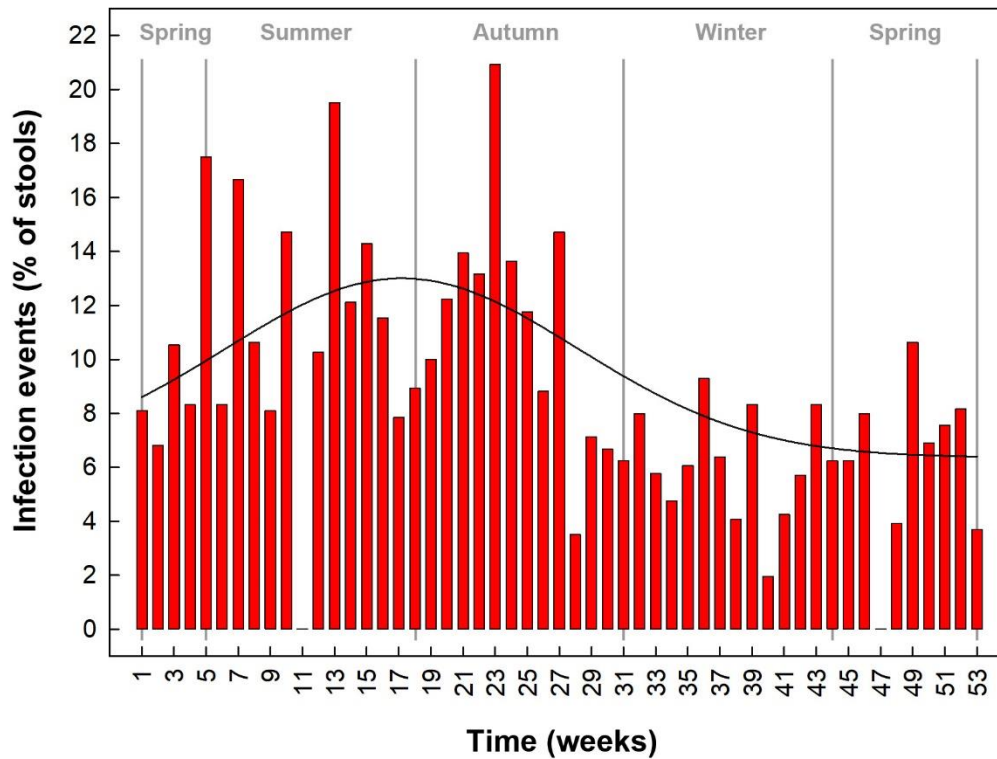


Figure S3. Temporal infections by *Campylobacter jejuni* in people living in southwestern Alberta over a 1-year study period (2008 to 2009). Stools were submitted to the Chinook Regional Hospital for microbiological screening by the physicians of people who exhibited signs of enteric infection. The curve was fitted to the prevalence data using the Dynamic Fit Wizard feature of SigmaPlot with the Gaussian, 4 Parameter option. The figure was generated from data published by Inglis et al. [5].

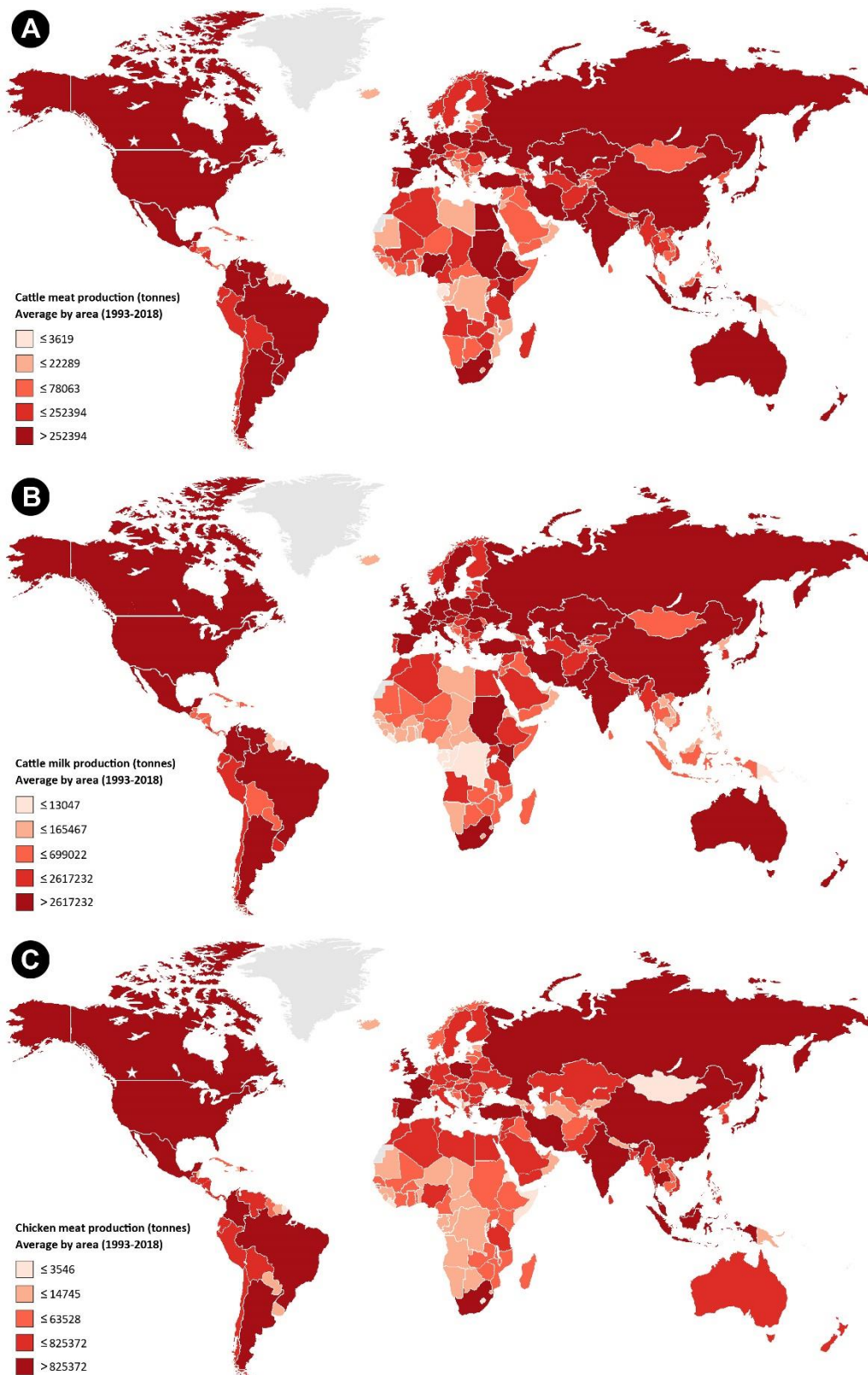


Figure S4. (A) Average global production of cattle meat by area. (B) Average global production of cattle milk by area. (C) Average global production of chicken meat by area. The star shows southwestern Alberta. The figure was generated from data obtained from the Food and Agriculture Organization of the United Nations [7].

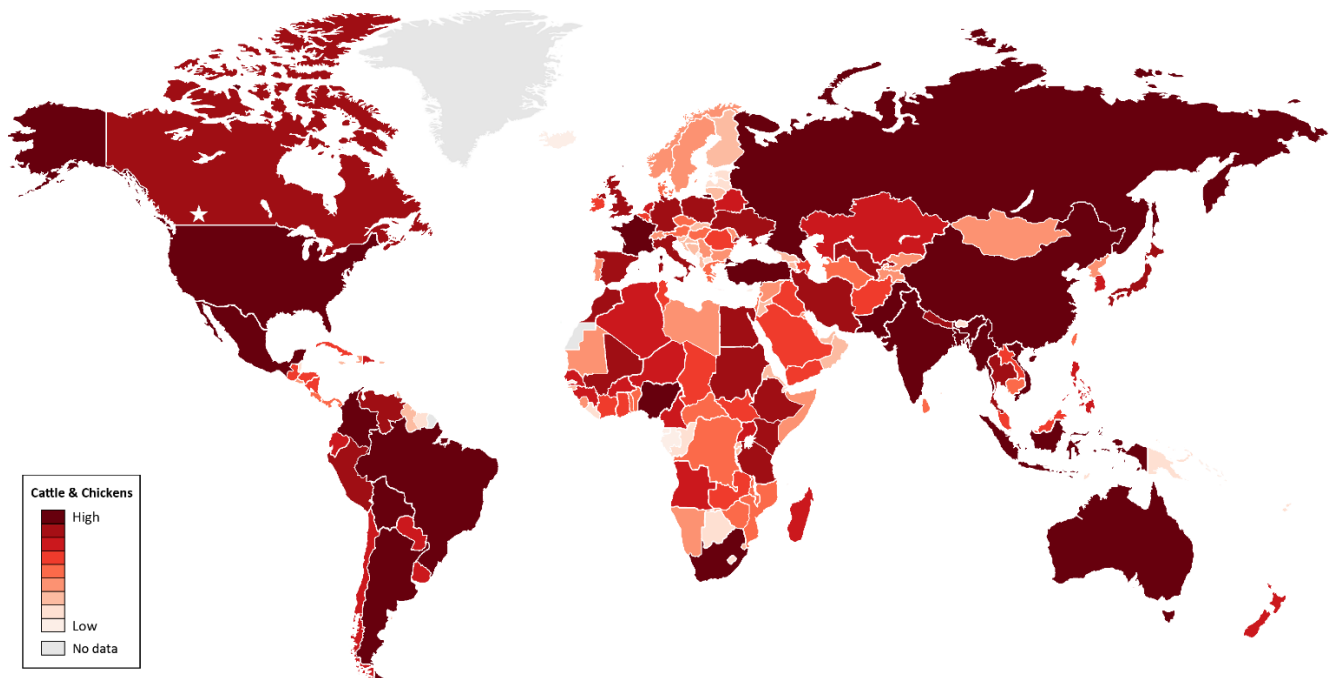


Figure S5. Global heat map of densities of cattle and chickens by area (i.e., cumulative rank). The star shows southwestern Alberta. The figure was generated from data obtained from the Food and Agriculture Organization of the United Nations [7]. Livestock densities and ranks are presented in Supplemental Table S4.

Table S1. Distribution of *Campylobacter jejuni* isolates from southwestern Alberta by year and source.

Source	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
People	80	103	109	389	851	290	88	65	77	75	73	70	79	106	93	2548
Cattle	0	598	0	0	470	1262	248	0	0	0	0	0	174	169	0	2921
Chicken	0	0	0	0	0	10	225	0	0	0	0	0	941	673	0	1849
Water	0	0	0	0	65	79	228	319	80	0	0	0	0	0	0	771
Total	80	701	109	389	1386	1641	789	384	157	75	73	70	1194	948	93	8089

Table S2 Distribution of *Campylobacter jejuni* isolates and comparative genomic fingerprinting (CGF40) subtype clusters (95% level of CGF40 resolution) by sampling origin in southwestern Alberta.

Category	People	Cattle	Chickens	Water	Total
No. isolates	2,548	2,921	1,849	771	8,089
No. CGF subtypes clusters	813	553	416	291	1,712
No. subtype clusters unique to origin (No. isolates)	599 (1098)	352 (597)	290 (725)	198 (341)	1,439 (2,761)
% unique subtype clusters	73.7	63.7	69.7	68.0	84.1
No. subtypes common to other origins (No. isolates)	214 (1,450)	201 (2,324)	126 (1,124)	93 (430)	272 (5,326) ¹
Distribution of subtypes (isolates) common to²:					
People	–	158 (2,110)	83 (713)	58 (329)	
Cattle	158 (1,270)	–	71 (681)	52 (266)	
Chickens	83 (741)	71 (1473)	–	45 (276)	
Water	58 (522)	52 (910)	45 (690)	–	

¹Different from the sum of the row because some subtypes were present in more than one origin.

²The number of subtype clusters and isolates within a column exceeds the number of common subtype clusters and isolates found in an origin because some subtype clusters were present in more than one other origin.

Table S3 Comparative genomic fingerprinting (CGF40) subtypes of *Campylobacter jejuni* isolates recovered from broilers (within a broiler barn and abattoir at which the broilers were processed) and beef cattle housed in a confined feeding operation adjacent to the broiler barn, and reference information within the Canadian *Campylobacter* CGF40 database (C3GFdb). The information presented in the table corresponds to subtype information presented in Figure 8.

Cycle	No of isolates					CGF subtype	MLST ¹	Cluster Size	Isolates of the same CGF subtype within the C3GFdb (%)			
	Broiler Barn	Broiler Abattoir	Beef Cattle	People	Total				Hu ²	Ch ³	Ca ⁴	AB ⁵
3	2	4	55	4	65	0238.007.002	ST-806	73	19.2	8.2	63.0	64.4
6	5	1	8	4	18	0853.008.001	ST-933	13	30.8	0.0	46.2	53.8
7	149 ⁶	43	5	0	197	0735.001.002	ST-459	76	5.3	0.0	85.5	93.4
7	17	29	0	0	46	0735.003.004	Unknown	5	0.0	0.0	100.0	100.0
7	7	6	0	0	13	0731.004.004	Unknown	16	6.3	0.0	50.0	100.0

¹Multi-Locus Sequence Typing (ST; sequence type).

²Human beings.

³Chickens.

⁴Cattle.

⁵Alberta.

⁶A *C. jejuni* outbreak occurred during cycle 7 (see Figure 7).

Table S4 Global cattle and chicken inventories (million [M] head) [7]¹.

Area	Cattle			Chicken			Cumulative
	Rank	No (M)	%	Rank	No (M)	%	Rank
China-Mainland	4	63.39	4.20	1	5146.15	19.62	5
Brazil	1	214.66	14.21	4	1466.56	5.59	5
United States of America	3	94.80	6.27	3	1972.26	7.52	6
India	2	193.46	12.80	7	807.89	3.08	9
Pakistan	7	47.82	3.16	5	1321.00	5.04	12
Mexico	8	35.22	2.33	8	580.83	2.21	16
Indonesia	20	17.12	1.13	2	3725.21	14.20	22
Russian Federation	18	18.15	1.20	9	497.40	1.90	27
Myanmar	17	18.58	1.23	10	394.62	1.50	27
Bangladesh	14	24.19	1.60	14	286.90	1.09	28
Turkey	21	17.04	1.13	12	342.57	1.31	33
Colombia	12	27.24	1.80	22	187.50	0.71	34
France	19	18.15	1.20	17	237.86	0.91	36
Argentina	6	54.46	3.60	39	120.95	0.46	45
Nigeria	16	20.66	1.37	32	167.81	0.64	48
Bolivia	36	9.74	0.64	18	231.14	0.88	54
Australia	13	24.72	1.64	41	111.92	0.43	54
South Africa	28	12.59	0.83	27	173.49	0.66	55
Viet Nam	45	6.06	0.40	11	382.60	1.46	56
Iran	51	5.19	0.34	6	1091.35	4.16	57
Ethiopia	5	63.28	4.19	53	64.46	0.25	58
Canada	31	11.50	0.76	29	171.40	0.65	60
Venezuela	23	16.05	1.06	38	123.17	0.47	61
UK & Northern Ireland	37	9.74	0.64	26	176.00	0.67	63
Germany ^c	30	11.64	0.77	34	160.00	0.61	64
Sudan	9	31.49	2.08	58	50.02	0.19	67
Poland	44	6.26	0.41	24	183.12	0.70	68
Kenya	15	20.90	1.38	54	56.66	0.22	69
Thailand	56	4.60	0.30	15	281.49	1.07	71
Japan	61	3.84	0.25	13	323.15	1.23	74
Uzbekistan	27	12.95	0.86	50	73.28	0.28	77
Italy ³	43	6.38	0.42	35	146.95	0.56	78
Spain ³	41	6.60	0.44	37	137.50	0.52	78
Peru	48	5.60	0.37	31	168.17	0.64	79
United Republic of Tanzania	11	27.82	1.84	70	38.47	0.15	81
Egypt	53	4.90	0.32	30	169.08	0.64	83
Morocco	68	3.33	0.22	19	208.63	0.80	87
Ukraine	67	3.33	0.22	21	191.97	0.73	88
Nepal	40	7.39	0.49	48	75.71	0.29	88
Mali	29	12.11	0.80	59	49.62	0.19	88
Ecuador	57	4.31	0.28	33	161.07	0.61	90
Republic of Korea	66	3.65	0.24	28	172.92	0.66	94
Dominican Republic	70	3.08	0.20	25	181.74	0.69	95
Uganda	22	16.33	1.08	73	37.04	0.14	95
Philippines	74	2.54	0.17	23	186.37	0.71	97
Cameroon	46	5.77	0.38	55	55.12	0.21	101
Kazakhstan	39	7.44	0.49	63	43.42	0.17	102
Madagascar	35	9.98	0.66	67	39.92	0.15	102
Burkina Faso	34	10.00	0.66	69	38.87	0.15	103
Netherlands ³	63	3.72	0.25	42	105.18	0.40	105

Chile	69	3.11	0.21	40	114.44	0.44	109
Senegal	65	3.67	0.24	46	81.42	0.31	111
Paraguay	25	13.80	0.91	87	24.75	0.09	112
Uruguay	32	11.40	0.75	81	31.37	0.12	113
Angola	52	5.09	0.34	62	44.37	0.17	114
Guinea	38	7.93	0.53	76	36.18	0.14	114
New Zealand	33	10.15	0.67	88	24.72	0.09	121
Niger	24	15.23	1.01	97	19.70	0.08	121
Algeria	88	1.78	0.12	36	138.58	0.53	124
Belarus	58	4.29	0.28	66	41.06	0.16	124
Zambia	64	3.68	0.24	64	41.88	0.16	128
Ghana	84	1.94	0.13	45	89.21	0.34	129
Malaysia	114	0.68	0.05	16	275.80	1.05	130
Honduras	72	2.90	0.19	61	47.20	0.18	133
Guatemala	60	4.01	0.27	74	36.93	0.14	134
Romania	86	1.92	0.13	49	73.99	0.28	135
Côte d'Ivoire	90	1.69	0.11	47	76.74	0.29	137
South Sudan	26	13.14	0.87	113	15.00	0.06	139
Iraq	83	1.98	0.13	57	50.07	0.19	140
Nicaragua	50	5.22	0.35	90	24.25	0.09	140
Saudi Arabia	121	0.57	0.04	20	196.99	0.75	141
Chad	10	30.61	2.03	134	6.31	0.02	144
Lao People's Democratic Republic	81	2.09	0.14	65	41.39	0.16	146
Cuba	62	3.75	0.25	85	26.70	0.10	147
Yemen	98	1.41	0.09	52	69.06	0.26	150
Ireland ³	42	6.56	0.43	111	15.50	0.06	153
Belgium ²	77	2.37	0.16	78	32.33	0.12	155
Azerbaijan	76	2.48	0.16	79	32.23	0.12	155
Tunisia	115	0.65	0.04	44	92.66	0.35	159
Afghanistan	47	5.65	0.37	115	13.89	0.05	162
Benin	75	2.50	0.17	93	21.98	0.08	168
Zimbabwe	49	5.52	0.37	129	8.75	0.03	178
Panama	96	1.50	0.10	84	28.14	0.11	180
Israel	122	0.55	0.04	60	49.04	0.19	182
Turkmenistan	79	2.27	0.15	103	16.91	0.06	182
Costa Rica	97	1.47	0.10	86	25.81	0.10	183
Hungary ²	105	0.91	0.06	80	31.84	0.12	185
Central African Republic	54	4.76	0.31	131	7.93	0.03	185
Denmark	95	1.50	0.10	92	22.46	0.09	187
Malawi	89	1.74	0.11	98	18.78	0.07	187
Taiwan	145	0.15	0.01	43	98.67	0.38	188
Mozambique	82	2.09	0.14	106	16.70	0.06	188
Cambodia	73	2.85	0.19	116	13.26	0.05	189
Austria ^c	87	1.88	0.12	104	16.74	0.06	191
Czechia	100	1.37	0.09	94	21.84	0.08	194
Greece ²	123	0.53	0.04	72	37.30	0.14	195
Sri Lanka	104	1.09	0.07	96	20.41	0.08	200
Democratic Republic of the Congo	102	1.21	0.08	99	18.56	0.07	201
Lebanon	153	0.09	0.01	51	73.20	0.28	204
Togo	128	0.46	0.03	77	33.24	0.13	205
Tajikistan	78	2.36	0.16	128	9.04	0.03	206
Somalia	59	4.23	0.28	148	3.72	0.01	207
Sierra Leone	118	0.58	0.04	91	23.73	0.09	209
Syrian Arab Republic	111	0.79	0.05	100	18.50	0.07	211

El Salvador	110	0.84	0.06	101	17.97	0.07	211
Switzerland	93	1.52	0.10	119	11.83	0.05	212
Namibia	71	2.93	0.19	142	4.35	0.02	213
Republic of Moldova	146	0.14	0.01	68	39.86	0.15	214
Portugal ³	92	1.67	0.11	122	10.76	0.04	214
Libya	140	0.23	0.02	75	36.55	0.14	215
Norway	108	0.87	0.06	108	15.85	0.06	216
Serbia	106	0.90	0.06	112	15.42	0.06	218
Bulgaria	124	0.53	0.03	95	20.79	0.08	219
Mongolia	55	4.75	0.31	167	0.89	0.00	222
Kuwait	167	0.03	0.00	56	54.64	0.21	223
Mauritania	85	1.93	0.13	140	4.68	0.02	225
Sweden ²	99	1.40	0.09	127	9.20	0.04	226
Democratic People's Republic of Korea	119	0.58	0.04	109	15.77	0.06	228
Haiti	94	1.51	0.10	135	5.84	0.02	229
Kyrgyzstan	91	1.68	0.11	139	4.82	0.02	230
Guyana	151	0.10	0.01	83	29.17	0.11	234
Finland	109	0.84	0.06	125	9.51	0.04	234
Trinidad and Tobago	165	0.04	0.00	71	38.44	0.15	236
Lithuania	116	0.63	0.04	120	11.56	0.04	236
Bosnia and Herzegovina	130	0.43	0.03	107	16.67	0.06	237
Georgia	107	0.88	0.06	130	7.94	0.03	237
Rwanda	101	1.33	0.09	136	5.57	0.02	237
Jordan	157	0.08	0.01	82	29.73	0.11	239
United Arab Emirates	150	0.11	0.01	89	24.67	0.09	239
Eritrea	80	2.12	0.14	162	1.13	0.00	242
Puerto Rico	136	0.36	0.02	110	15.57	0.06	246
Slovakia	129	0.43	0.03	117	12.85	0.05	246
Croatia	131	0.42	0.03	118	12.16	0.05	249
Jamaica	147	0.12	0.01	114	14.35	0.05	261
Eswatini	117	0.62	0.04	146	3.96	0.02	263
Albania	132	0.42	0.03	132	7.27	0.03	264
Armenia	120	0.57	0.04	144	4.15	0.02	264
Burundi	112	0.76	0.05	153	2.73	0.01	265
Guinea-Bissau	113	0.75	0.05	155	2.11	0.01	268
Oman	133	0.40	0.03	138	4.91	0.02	271
Slovenia	126	0.48	0.03	145	4.03	0.02	271
Botswana	103	1.10	0.07	173	0.50	0.00	276
Mauritius	181	0.00	0.00	105	16.73	0.06	286
Qatar	162	0.04	0.00	124	9.71	0.04	286
Fiji	149	0.11	0.01	137	5.47	0.02	286
Congo	135	0.37	0.02	151	3.05	0.01	286
Gambia	127	0.47	0.03	159	1.48	0.01	286
Palestine	166	0.03	0.00	121	11.23	0.04	287
Liberia	161	0.05	0.00	126	9.23	0.04	287
Latvia	134	0.40	0.03	154	2.34	0.01	288
Brunei Darussalam	188	0.00	0.00	102	16.98	0.06	290
Papua New Guinea	152	0.09	0.01	141	4.66	0.02	293
Estonia	139	0.25	0.02	156	2.08	0.01	295
Suriname	164	0.04	0.00	133	6.35	0.02	297
Bhutan	137	0.30	0.02	161	1.30	0.00	298
Bahrain	176	0.01	0.00	123	9.84	0.04	299
North Macedonia	141	0.22	0.01	158	1.56	0.01	299
Lesotho	125	0.51	0.03	176	0.42	0.00	301

Belize	148	0.12	0.01	157	1.64	0.01	305
Timor-Leste	142	0.21	0.01	166	0.90	0.00	308
Vanuatu	144	0.18	0.01	165	0.98	0.00	309
Cyprus	158	0.07	0.00	152	2.76	0.01	310
Gabon	163	0.04	0.00	149	3.19	0.01	312
Barbados	174	0.01	0.00	143	4.20	0.02	317
Montenegro	155	0.08	0.01	170	0.69	0.00	325
New Caledonia	154	0.08	0.01	174	0.48	0.00	328
Comoros	160	0.05	0.00	171	0.55	0.00	331
Samoa	159	0.06	0.00	172	0.51	0.00	331
Luxembourg	143	0.19	0.01	188	0.13	0.00	331
Cabo Verde	168	0.03	0.00	164	1.00	0.00	332
Djibouti	138	0.30	0.02	196	0.00	0.00	334
Malta ^c	172	0.01	0.00	163	1.00	0.00	335
Singapore	190	0.00	0.00	147	3.79	0.01	337
Bahamas	187	0.00	0.00	150	3.05	0.01	337
Iceland	156	0.08	0.01	184	0.23	0.00	340
China, Hong Kong SAR	185	0.00	0.00	160	1.38	0.01	345
Saint Lucia	175	0.01	0.00	175	0.47	0.00	350
Tonga	173	0.01	0.00	178	0.35	0.00	351
Solomon Islands	170	0.02	0.00	183	0.25	0.00	353
Equatorial Guinea	178	0.01	0.00	177	0.38	0.00	355
Micronesia	169	0.02	0.00	186	0.19	0.00	355
Dominica	171	0.01	0.00	185	0.20	0.00	356
French Polynesia	177	0.01	0.00	180	0.33	0.00	357
Grenada	179	0.00	0.00	181	0.28	0.00	360
China, Macao SAR	193	0.00	0.00	168	0.79	0.00	361
Kiribati	194	0.00	0.00	169	0.70	0.00	363
Saint Vincent and the Grenadines	182	0.00	0.00	182	0.25	0.00	364
Sao Tome and Principe	186	0.00	0.00	179	0.34	0.00	365
Antigua and Barbuda	180	0.00	0.00	187	0.16	0.00	367
Saint Kitts and Nevis	183	0.00	0.00	189	0.10	0.00	372
Seychelles	189	0.00	0.00	191	0.05	0.00	380
Faroe Islands	184	0.00	0.00	197	0.00	0.00	381
Niue	192	0.00	0.00	192	0.02	0.00	384
Cook Islands	191	0.00	0.00	193	0.02	0.00	384
Tuvalu	195	0.00	0.00	190	0.06	0.00	385
Tokelau	196	0.00	0.00	194	0.01	0.00	390
Nauru	197	0.00	0.00	195	0.01	0.00	392

¹Livestock density data is for 2019 unless indicated otherwise.

²Chicken density data is for 2018.

³Chicken density data is for 2017.

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