

# A zero-truncated one-inflated model with application to population monitoring: Simulations data

Herman Persson

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## ZTOIP simulations

Type	$p$	$N$	$\lambda$	n	$\bar{N}$	90% CI	99% CI	RMSE
ZOTP	0.00	500	1	1000	526.278	[365, 741]	[332, 889]	120.575
ZOTP	0.00	500	2	1000	500.017	[450, 552]	[430, 583]	30.974
ZOTP	0.00	500	3	1000	500.221	[477, 525]	[464, 533]	14.580
ZOTP	0.00	1500	1	1000	1519.772	[1256, 1832]	[1167, 1995]	179.181
ZOTP	0.00	1500	2	1000	1500.083	[1413, 1589]	[1385, 1627]	53.349
ZOTP	0.00	1500	3	1000	1498.596	[1459, 1542]	[1447, 1556]	24.911
ZOTP	0.00	2500	1	1000	2523.088	[2177, 2920]	[2045, 3145]	229.767
ZOTP	0.00	2500	2	1000	2502.101	[2391, 2619]	[2346, 2655]	68.430
ZOTP	0.00	2500	3	1000	2501.070	[2446, 2558]	[2427, 2583]	33.321
ZOTP	0.05	500	1	1000	521.818	[367, 731]	[328, 918]	119.399
ZOTP	0.05	500	2	1000	502.104	[446, 563]	[420, 584]	34.866
ZOTP	0.05	500	3	1000	500.897	[475, 527]	[463, 538]	15.898
ZOTP	0.05	1500	1	1000	1515.885	[1243, 1844]	[1170, 2034]	182.159
ZOTP	0.05	1500	2	1000	1503.029	[1412, 1602]	[1376, 1652]	59.144
ZOTP	0.05	1500	3	1000	1500.509	[1454, 1546]	[1433, 1565]	27.857
ZOTP	0.05	2500	1	1000	2522.989	[2151, 2959]	[2047, 3193]	244.000
ZOTP	0.05	2500	2	1000	2504.523	[2381, 2624]	[2329, 2679]	74.911
ZOTP	0.05	2500	3	1000	2500.621	[2441, 2560]	[2420, 2585]	35.426
ZOTP	0.10	500	1	1000	530.537	[360, 796]	[306, 939]	140.373
ZOTP	0.10	500	2	1000	502.741	[445, 568]	[418, 595]	37.777
ZOTP	0.10	500	3	1000	501.118	[472, 531]	[460, 547]	18.126
ZOTP	0.10	1500	1	1000	1526.197	[1221, 1884]	[1129, 2079]	210.708
ZOTP	0.10	1500	2	1000	1504.806	[1404, 1615]	[1365, 1660]	65.448
ZOTP	0.10	1500	3	1000	1501.047	[1450, 1551]	[1432, 1571]	30.589
ZOTP	0.10	2500	1	1000	2508.095	[2120, 2961]	[2022, 3191]	255.805
ZOTP	0.10	2500	2	1000	2497.087	[2361, 2630]	[2305, 2681]	82.192
ZOTP	0.10	2500	3	1000	2500.815	[2435, 2569]	[2403, 2602]	41.253
ZTOIP	0.00	500	1	1000	479.072	[365, 555]	[332, 580]	60.871
ZTOIP	0.00	500	2	1000	493.238	[450, 526]	[430, 538]	24.100
ZTOIP	0.00	500	3	1000	497.975	[477, 516]	[464, 522]	12.266
ZTOIP	0.00	1500	1	1000	1457.163	[1256, 1596]	[1167, 1635]	112.389
ZTOIP	0.00	1500	2	1000	1487.978	[1413, 1545]	[1385, 1561]	41.819
ZTOIP	0.00	1500	3	1000	1495.173	[1459, 1528]	[1447, 1537]	21.443
ZTOIP	0.00	2500	1	1000	2441.899	[2177, 2618]	[2045, 2682]	147.332
ZTOIP	0.00	2500	2	1000	2486.019	[2391, 2557]	[2346, 2577]	52.870

Type	$p$	$N$	$\lambda$	$n$	$\bar{N}$	90% CI	99% CI	RMSE
ZTOIP	0.00	2500	3	1000	2495.929	[2446, 2538]	[2427, 2556]	27.774
ZTOIP	0.05	500	1	1000	498.453	[367, 618]	[328, 655]	77.306
ZTOIP	0.05	500	2	1000	502.008	[446, 563]	[420, 584]	34.643
ZTOIP	0.05	500	3	1000	500.896	[475, 527]	[463, 538]	15.904
ZTOIP	0.05	1500	1	1000	1501.033	[1243, 1743]	[1170, 1812]	153.884
ZTOIP	0.05	1500	2	1000	1503.013	[1412, 1602]	[1375, 1652]	59.104
ZTOIP	0.05	1500	3	1000	1500.533	[1454, 1546]	[1433, 1565]	27.869
ZTOIP	0.05	2500	1	1000	2510.530	[2151, 2868]	[2047, 2962]	217.914
ZTOIP	0.05	2500	2	1000	2504.518	[2381, 2624]	[2329, 2679]	74.912
ZTOIP	0.05	2500	3	1000	2500.656	[2441, 2560]	[2420, 2585]	35.427
ZTOIP	0.10	500	1	1000	513.547	[360, 679]	[306, 724]	102.668
ZTOIP	0.10	500	2	1000	502.740	[445, 568]	[418, 595]	37.779
ZTOIP	0.10	500	3	1000	501.116	[472, 531]	[460, 547]	18.126
ZTOIP	0.10	1500	1	1000	1522.386	[1221, 1871]	[1129, 2010]	199.845
ZTOIP	0.10	1500	2	1000	1504.797	[1404, 1615]	[1365, 1660]	65.443
ZTOIP	0.10	1500	3	1000	1501.038	[1450, 1551]	[1432, 1571]	30.586
ZTOIP	0.10	2500	1	1000	2506.286	[2120, 2961]	[2022, 3158]	249.652
ZTOIP	0.10	2500	2	1000	2497.065	[2361, 2630]	[2305, 2681]	82.188
ZTOIP	0.10	2500	3	1000	2500.807	[2435, 2569]	[2403, 2602]	41.253
ZTP	0.00	500	1	1000	501.466	[462, 544]	[442, 566]	25.740
ZTP	0.00	500	2	1000	500.655	[482, 519]	[475, 525]	10.984
ZTP	0.00	500	3	1000	500.028	[491, 509]	[487, 512]	5.397
ZTP	0.00	1500	1	1000	1502.316	[1427, 1582]	[1404, 1612]	46.741
ZTP	0.00	1500	2	1000	1500.519	[1468, 1531]	[1454, 1540]	18.944
ZTP	0.00	1500	3	1000	1500.077	[1484, 1516]	[1478, 1523]	9.616
ZTP	0.00	2500	1	1000	2500.925	[2404, 2604]	[2372, 2634]	59.249
ZTP	0.00	2500	2	1000	2500.018	[2462, 2539]	[2444, 2555]	23.489
ZTP	0.00	2500	3	1000	2500.047	[2478, 2521]	[2470, 2527]	12.956
ZTP	0.05	500	1	1000	567.476	[513, 630]	[496, 659]	76.005
ZTP	0.05	500	2	1000	578.105	[550, 604]	[542, 616]	79.857
ZTP	0.05	500	3	1000	593.732	[572, 614]	[564, 624]	94.618
ZTP	0.05	1500	1	1000	1695.947	[1612, 1792]	[1577, 1838]	203.590
ZTP	0.05	1500	2	1000	1733.515	[1686, 1781]	[1668, 1799]	235.285
ZTP	0.05	1500	3	1000	1780.040	[1743, 1818]	[1730, 1836]	280.974
ZTP	0.05	2500	1	1000	2823.918	[2700, 2962]	[2639, 3018]	333.494
ZTP	0.05	2500	2	1000	2888.895	[2825, 2950]	[2801, 2979]	390.703
ZTP	0.05	2500	3	1000	2968.134	[2921, 3013]	[2903, 3028]	468.976
ZTP	0.10	500	1	1000	641.600	[574, 714]	[555, 756]	148.111
ZTP	0.10	500	2	1000	666.115	[627, 704]	[612, 721]	167.824
ZTP	0.10	500	3	1000	698.049	[666, 729]	[657, 738]	198.921
ZTP	0.10	1500	1	1000	1918.818	[1803, 2047]	[1772, 2097]	425.173
ZTP	0.10	1500	2	1000	1995.961	[1927, 2064]	[1899, 2096]	497.663
ZTP	0.10	1500	3	1000	2092.123	[2038, 2148]	[2013, 2165]	593.115
ZTP	0.10	2500	1	1000	3192.665	[3040, 3352]	[2968, 3433]	699.417
ZTP	0.10	2500	2	1000	3326.274	[3240, 3418]	[3204, 3451]	827.928
ZTP	0.10	2500	3	1000	3489.176	[3422, 3557]	[3395, 3584]	990.046
ZTP	0.00	500	1	100	499.770	[456, 539]	[431, 547]	24.027
ZTP	0.00	500	2	100	499.690	[477, 520]	[475, 524]	12.039
ZTP	0.00	500	3	100	499.840	[491, 508]	[487, 510]	5.030
ZTP	0.00	2500	1	100	2502.840	[2401, 2589]	[2368, 2620]	55.643
ZTP	0.00	2500	2	100	2494.820	[2453, 2533]	[2444, 2537]	24.372
ZTP	0.00	2500	3	100	2500.150	[2476, 2523]	[2467, 2528]	12.960

Type	$p$	$N$	$\lambda$	n	$\bar{N}$	90% CI	99% CI	RMSE
ZTP	0.10	500	1	100	637.750	[575, 717]	[536, 750]	144.346
ZTP	0.10	500	2	100	663.030	[626, 704]	[607, 707]	164.411
ZTP	0.10	500	3	100	692.970	[668, 717]	[652, 726]	193.600
ZTP	0.10	2500	1	100	3203.340	[3043, 3377]	[3015, 3473]	710.561
ZTP	0.10	2500	2	100	3323.640	[3231, 3409]	[3204, 3446]	825.312
ZTP	0.10	2500	3	100	3493.880	[3425, 3557]	[3394, 3591]	994.758
ZTP	0.20	500	1	100	816.620	[721, 928]	[685, 994]	323.520
ZTP	0.20	500	2	100	875.770	[827, 927]	[810, 990]	377.385
ZTP	0.20	500	3	100	954.690	[899, 997]	[874, 1012]	455.594
ZTP	0.20	2500	1	100	4184.150	[3884, 4487]	[3829, 4560]	1692.679
ZTP	0.20	2500	2	100	4420.200	[4274, 4547]	[4242, 4591]	1922.072
ZTP	0.20	2500	3	100	4745.830	[4627, 4860]	[4512, 4902]	2247.061
ZTP	0.30	500	1	100	1107.230	[944, 1279]	[846, 1312]	616.347
ZTP	0.30	500	2	100	1189.460	[1079, 1282]	[1033, 1327]	692.422
ZTP	0.30	500	3	100	1295.960	[1208, 1398]	[1177, 1426]	797.996
ZTP	0.30	2500	1	100	5523.030	[5160, 5834]	[5075, 5973]	3029.958
ZTP	0.30	2500	2	100	5959.290	[5742, 6175]	[5630, 6263]	3461.917
ZTP	0.30	2500	3	100	6494.470	[6264, 6703]	[6197, 6861]	3996.654
ZTP	0.40	500	1	100	1562.130	[1319, 1868]	[1181, 1996]	1075.897
ZTP	0.40	500	2	100	1654.140	[1484, 1801]	[1395, 1936]	1158.904
ZTP	0.40	500	3	100	1789.190	[1693, 1898]	[1574, 1946]	1291.144
ZTP	0.40	2500	1	100	7539.170	[6859, 8130]	[6590, 8393]	5054.604
ZTP	0.40	2500	2	100	8267.580	[7890, 8643]	[7778, 8803]	5771.913
ZTP	0.40	2500	3	100	8982.160	[8691, 9278]	[8536, 9469]	6484.816

## ZTOINB simulations

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZOTNB	0.00	500	1	0.2	118033.629	[364, 294]	[195, 242]	284495.720
ZOTNB	0.00	500	1	0.6	87194.406	[473, 205]	[1711, 643]	269133.604
ZOTNB	0.00	500	1	1.0	69725.323	[373, 423]	[620417, 374]	257708.983
ZOTNB	0.00	500	2	0.2	47707.386	[2318, 360]	[327, 545]	260414.467
ZOTNB	0.00	500	2	0.6	1837.972	[939, 679]	[509, 447]	28684.828
ZOTNB	0.00	500	2	1.0	528.658	[435, 382]	[373, 464]	149.966
ZOTNB	0.00	500	3	0.2	1886.640	[487, 439]	[513, 523]	35297.102
ZOTNB	0.00	500	3	0.6	508.084	[446, 632]	[467, 533]	66.205
ZOTNB	0.00	500	3	1.0	505.365	[534, 485]	[497, 467]	48.674
ZOTNB	0.00	1500	1	0.2	370380.547	[726, 2428960]	[873, 1163]	3114148.761
ZOTNB	0.00	1500	1	0.6	68381.830	[1139, 2266]	[823, 1052]	395225.433
ZOTNB	0.00	1500	1	1.0	53851.249	[1670, 977]	[1750, 1313]	374430.569
ZOTNB	0.00	1500	2	0.2	22560.082	[2122, 1238]	[1539, 1283]	306720.349
ZOTNB	0.00	1500	2	0.6	1554.353	[1915, 1691]	[2096, 1399]	279.560
ZOTNB	0.00	1500	2	1.0	1522.979	[2481, 1301]	[1453, 1786]	198.978
ZOTNB	0.00	1500	3	0.2	1544.789	[1556, 1337]	[1722, 1399]	251.871
ZOTNB	0.00	1500	3	0.6	1509.111	[1675, 1421]	[1491, 1492]	102.107
ZOTNB	0.00	1500	3	1.0	1505.914	[1476, 1528]	[1624, 1397]	78.006
ZOTNB	0.00	2500	1	0.2	346455.447	[3560, 2040]	[1111, 3002]	2140707.323
ZOTNB	0.00	2500	1	0.6	31601.438	[2164, 1368]	[1782, 4430]	407609.494
ZOTNB	0.00	2500	1	1.0	17306.805	[1895, 1863]	[2977, 2945]	313508.690

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZOTNB 0.00	2500	2	0.2	2804.449	[2616, 6943]	[2706, 2353]	2580.526	
ZOTNB 0.00	2500	2	0.6	2534.641	[2538, 2502]	[2187, 2932]	308.764	
ZOTNB 0.00	2500	2	1.0	2525.070	[3127, 2446]	[2514, 2369]	244.687	
ZOTNB 0.00	2500	3	0.2	2539.654	[2405, 2593]	[2253, 3078]	312.665	
ZOTNB 0.00	2500	3	0.6	2501.302	[2485, 2502]	[2463, 2446]	130.482	
ZOTNB 0.00	2500	3	1.0	2501.185	[2573, 2516]	[2560, 2429]	103.171	
ZOTNB 0.05	500	1	0.2	124770.190	[248, 1076]	[338, 4250]	289360.689	
ZOTNB 0.05	500	1	0.6	99775.379	[322701, 543]	[191, 195]	596397.939	
ZOTNB 0.05	500	1	1.0	70696.867	[198, 1650]	[193, 1965]	244879.079	
ZOTNB 0.05	500	2	0.2	57113.311	[2024, 705]	[477, 407]	280431.885	
ZOTNB 0.05	500	2	0.6	2698.752	[336, 547]	[575, 474]	56371.059	
ZOTNB 0.05	500	2	1.0	558.830	[778, 447]	[663, 454]	725.183	
ZOTNB 0.05	500	3	0.2	3178.446	[843, 461]	[497, 386]	64908.544	
ZOTNB 0.05	500	3	0.6	510.454	[470, 468]	[429, 558]	74.441	
ZOTNB 0.05	500	3	1.0	505.120	[489, 486]	[495, 546]	53.871	
ZOTNB 0.05	1500	1	0.2	242605.664	[1689, 685]	[809, 765]	694925.091	
ZOTNB 0.05	1500	1	0.6	120312.303	[1280, 992409]	[1381, 1399]	783702.624	
ZOTNB 0.05	1500	1	1.0	51155.950	[3545, 1380]	[2011, 1177]	329973.707	
ZOTNB 0.05	1500	2	0.2	6651.298	[1612, 1343]	[6321, 1504]	100957.512	
ZOTNB 0.05	1500	2	0.6	1550.391	[1546, 1406]	[2368, 1188]	307.629	
ZOTNB 0.05	1500	2	1.0	1532.907	[1497, 1265]	[1783, 1342]	212.908	
ZOTNB 0.05	1500	3	0.2	1527.870	[1767, 1291]	[1353, 1523]	256.109	
ZOTNB 0.05	1500	3	0.6	1512.366	[1689, 1493]	[1789, 1469]	109.419	
ZOTNB 0.05	1500	3	1.0	1503.476	[1539, 1486]	[1377, 1544]	84.995	
ZOTNB 0.05	2500	1	0.2	296129.261	[1400, 3223]	[1406, 3461]	1008101.851	
ZOTNB 0.05	2500	1	0.6	60628.557	[2054, 3736]	[3050, 1966]	487908.161	
ZOTNB 0.05	2500	1	1.0	14335.411	[1621, 2211]	[2749, 3502]	149681.476	
ZOTNB 0.05	2500	2	0.2	3455.695	[1989, 3302]	[4659, 1923]	22771.310	
ZOTNB 0.05	2500	2	0.6	2563.565	[2360, 2407]	[2823, 2677]	369.436	
ZOTNB 0.05	2500	2	1.0	2521.357	[2137, 2879]	[2428, 2152]	272.578	
ZOTNB 0.05	2500	3	0.2	2551.885	[3093, 2135]	[3060, 3199]	332.417	
ZOTNB 0.05	2500	3	0.6	2504.755	[2620, 2536]	[2495, 2364]	135.169	
ZOTNB 0.05	2500	3	1.0	2504.522	[2317, 2649]	[2504, 2453]	110.641	
ZOTNB 0.10	500	1	0.2	115417.949	[212, 243]	[352, 481046]	268512.795	
ZOTNB 0.10	500	1	0.6	83239.033	[730977, 261]	[518, 231]	249703.261	
ZOTNB 0.10	500	1	1.0	86195.761	[294, 476620]	[273, 415]	266780.641	
ZOTNB 0.10	500	1	2.0	62573.585	[330, 329268]	[477, 331]	235195.473	
ZOTNB 0.10	500	2	0.2	56004.458	[359, 331]	[424, 459]	253450.411	
ZOTNB 0.10	500	2	0.6	4904.217	[1045, 503]	[624, 315]	78061.016	
ZOTNB 0.10	500	2	1.0	2152.802	[310, 418]	[515, 479]	50749.492	
ZOTNB 0.10	500	2	2.0	532.126	[520, 440]	[552, 420]	190.390	
ZOTNB 0.10	500	3	0.2	3721.020	[495, 439]	[1295, 599]	78914.851	
ZOTNB 0.10	500	3	0.6	512.870	[488, 667]	[435, 472]	84.009	
ZOTNB 0.10	500	3	1.0	508.541	[503, 464]	[486, 574]	63.254	
ZOTNB 0.10	500	3	2.0	503.542	[494, 507]	[530, 471]	43.200	
ZOTNB 0.10	1500	1	0.2	269717.643	[21489, 1095]	[1582, 2079]	766920.985	
ZOTNB 0.10	1500	1	0.6	132641.967	[2590, 966]	[2410, 627230]	596414.156	
ZOTNB 0.10	1500	1	1.0	72684.143	[1353, 3005]	[689, 1631]	429369.270	
ZOTNB 0.10	1500	2	0.2	17397.536	[1817, 2459]	[953, 1341]	273387.509	
ZOTNB 0.10	1500	2	0.6	1538.304	[1456, 1422]	[1671, 1367]	315.501	
ZOTNB 0.10	1500	2	1.0	1532.442	[1409, 1221]	[1544, 1621]	241.353	
ZOTNB 0.10	1500	3	0.2	1546.193	[1579, 1302]	[1316, 1450]	291.399	

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZOTNB	0.10	1500	3	0.6	1508.200	[1358, 1453]	[1432, 1411]	125.328
ZOTNB	0.10	1500	3	1.0	1503.692	[1658, 1524]	[1492, 1424]	94.189
ZOTNB	0.10	2500	1	0.2	332640.597	[1852, 4270006]	[1537, 1589]	1038239.723
ZOTNB	0.10	2500	1	0.6	73808.500	[15596, 2436]	[1916, 8228]	558533.478
ZOTNB	0.10	2500	1	1.0	34487.377	[1286, 1461]	[2400, 2279]	373960.255
ZOTNB	0.10	2500	2	0.2	5489.282	[2718, 1844]	[2571, 2936]	88062.813
ZOTNB	0.10	2500	2	0.6	2557.703	[2961, 2004]	[2275, 3092]	380.237
ZOTNB	0.10	2500	2	1.0	2531.200	[2574, 3186]	[2185, 2470]	288.395
ZOTNB	0.10	2500	3	0.2	2540.567	[2582, 2182]	[2560, 2637]	345.514
ZOTNB	0.10	2500	3	0.6	2508.969	[2635, 2472]	[2460, 2258]	150.597
ZOTNB	0.10	2500	3	1.0	2500.881	[2706, 2538]	[2494, 2468]	117.494
ZTNB	0.00	500	1	0.2	49802.981	[194216, 415]	[250, 863]	180007.284
ZTNB	0.00	500	1	0.6	2353.522	[461, 382]	[529, 536]	31801.576
ZTNB	0.00	500	1	1.0	784.231	[420, 548]	[918, 356]	8103.528
ZTNB	0.00	500	2	0.2	553.389	[718, 367]	[369, 505]	272.339
ZTNB	0.00	500	2	0.6	503.549	[548, 512]	[474, 518]	45.119
ZTNB	0.00	500	2	1.0	503.263	[478, 550]	[474, 481]	32.549
ZTNB	0.00	500	3	0.2	507.420	[476, 516]	[509, 471]	60.304
ZTNB	0.00	500	3	0.6	500.655	[461, 498]	[482, 517]	20.727
ZTNB	0.00	500	3	1.0	500.838	[502, 522]	[488, 511]	15.154
ZTNB	0.00	1500	1	0.2	18172.599	[910, 1310]	[1310, 1424]	158154.288
ZTNB	0.00	1500	1	0.6	1548.859	[1271, 1527]	[1542, 1574]	304.697
ZTNB	0.00	1500	1	1.0	1524.227	[1482, 1226]	[1377, 1348]	202.353
ZTNB	0.00	1500	2	0.2	1523.324	[1367, 1517]	[1388, 1766]	215.613
ZTNB	0.00	1500	2	0.6	1504.041	[1492, 1432]	[1636, 1443]	73.820
ZTNB	0.00	1500	2	1.0	1501.283	[1670, 1487]	[1584, 1492]	54.404
ZTNB	0.00	1500	3	0.2	1508.237	[1443, 1434]	[1440, 1593]	95.995
ZTNB	0.00	1500	3	0.6	1501.475	[1514, 1500]	[1520, 1463]	35.508
ZTNB	0.00	1500	3	1.0	1501.663	[1525, 1481]	[1513, 1511]	25.775
ZTNB	0.00	2500	1	0.2	6123.233	[2639, 2869]	[2192, 1812]	99734.090
ZTNB	0.00	2500	1	0.6	2574.014	[2572, 2401]	[2578, 2272]	411.430
ZTNB	0.00	2500	1	1.0	2538.906	[2506, 3013]	[2567, 2342]	258.639
ZTNB	0.00	2500	2	0.2	2533.842	[2211, 2700]	[2430, 2704]	259.133
ZTNB	0.00	2500	2	0.6	2500.195	[2515, 2363]	[2321, 2508]	96.283
ZTNB	0.00	2500	2	1.0	2502.056	[2554, 2614]	[2467, 2391]	69.351
ZTNB	0.00	2500	3	0.2	2505.760	[2702, 2714]	[2469, 2606]	122.122
ZTNB	0.00	2500	3	0.6	2501.523	[2487, 2469]	[2510, 2546]	44.553
ZTNB	0.00	2500	3	1.0	2500.362	[2515, 2476]	[2441, 2471]	32.080
ZTNB	0.05	500	1	0.2	379637.012	[1449, 28340]	[323788, 548409]	546507.039
ZTNB	0.05	500	1	0.6	40383.248	[203814, 633]	[2022, 511]	168173.403
ZTNB	0.05	500	1	1.0	27539.493	[878, 731]	[3114, 1054]	598800.575
ZTNB	0.05	500	2	0.2	440076.454	[1852, 9559]	[1966, 1808]	777083.924
ZTNB	0.05	500	2	0.6	846.083	[926, 731]	[877, 642]	397.710
ZTNB	0.05	500	2	1.0	719.787	[711, 811]	[907, 917]	241.094
ZTNB	0.05	500	3	0.2	346567.838	[3237, 1316454]	[4792, 2601]	3957782.618
ZTNB	0.05	500	3	0.6	794.985	[730, 786]	[758, 720]	307.792
ZTNB	0.05	500	3	1.0	711.268	[647, 719]	[719, 710]	217.459
ZTNB	0.05	1500	1	0.2	1457426.601	[908529, 1478418]	[5782, 27348]	1841003.866
ZTNB	0.05	1500	1	0.6	20123.814	[2189, 33760]	[2180, 2742]	175831.290
ZTNB	0.05	1500	1	1.0	2465.554	[2509, 2529]	[2647, 1933]	2503.268
ZTNB	0.05	1500	2	0.2	1213536.234	[1948828, 3614]	[6211088, 3641]	2421654.651

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZTNB	0.05	1500	2	0.6	2445.055	[2322, 2744]	[2276, 2556]	986.796
ZTNB	0.05	1500	2	1.0	2119.999	[2067, 2150]	[2214, 1985]	636.733
ZTNB	0.05	1500	3	0.2	215796.146	[13338, 4963]	[5722, 7210]	1106995.370
ZTNB	0.05	1500	3	0.6	2342.783	[2298, 2489]	[2615, 2334]	855.032
ZTNB	0.05	1500	3	1.0	2118.239	[2290, 2115]	[2230, 2048]	624.216
ZTNB	0.05	2500	1	0.2	2529716.262	[4651119, 862927]	[2077481, 25375]	3374420.726
ZTNB	0.05	2500	1	0.6	6534.340	[4889, 4395]	[6496, 3176]	32343.367
ZTNB	0.05	2500	1	1.0	3917.949	[3074, 3705]	[3687, 4817]	1657.577
ZTNB	0.05	2500	2	0.2	2275920.260	[15950, 6101121]	[7291658, 57701]	9669470.303
ZTNB	0.05	2500	2	0.6	4079.596	[4087, 3860]	[3955, 4620]	1624.089
ZTNB	0.05	2500	2	1.0	3531.588	[3880, 3529]	[3312, 3453]	1049.052
ZTNB	0.05	2500	3	0.2	187237.607	[12380, 8261]	[9458, 19292]	1457373.311
ZTNB	0.05	2500	3	0.6	3900.340	[4030, 4022]	[4065, 4262]	1411.903
ZTNB	0.05	2500	3	1.0	3529.476	[3539, 3455]	[3495, 3736]	1035.249
ZTNB	0.10	500	1	0.2	503330.718	[1101462, 1418662]	[194631, 1412]	602446.655
ZTNB	0.10	500	1	0.6	249913.245	[632152, 652861]	[1161, 1307]	470054.035
ZTNB	0.10	500	1	1.0	88143.480	[719, 1438]	[1615, 1056]	293916.213
ZTNB	0.10	500	2	0.2	1412915.296	[2831854, 585068]	[1812219, 1340646]	3156722.129
ZTNB	0.10	500	2	0.6	65671.382	[2347, 2879]	[2015, 2096]	320767.925
ZTNB	0.10	500	2	1.0	1202.638	[1215, 1276]	[986, 1935]	813.411
ZTNB	0.10	500	3	0.2	1965431.646	[1927769, 1899101]	[920907, 1872572]	2613362.589
ZTNB	0.10	500	3	0.6	9973.864	[3101, 2666]	[1466, 2387]	113997.260
ZTNB	0.10	500	3	1.0	1163.157	[1040, 1107]	[1106, 1149]	689.474
ZTNB	0.10	1500	1	0.2	1491369.129	[1231937, 1965708]	[956503, 1766063]	1722776.326
ZTNB	0.10	1500	1	0.6	867524.618	[5780, 3674]	[6119, 24120]	4055110.655
ZTNB	0.10	1500	1	1.0	68459.031	[3660, 5269]	[5475, 5088]	942839.813
ZTNB	0.10	1500	2	0.2	4426987.878	[4340030, 7558955]	[6302383, 2186842]	4971403.292
ZTNB	0.10	1500	2	0.6	16138.336	[11932, 3895]	[6564, 4938]	248340.302
ZTNB	0.10	1500	2	1.0	3478.416	[3410, 3181]	[2924, 3487]	2047.616
ZTNB	0.10	1500	3	0.2	5392809.477	[2177364, 1857475]	[2461365, 6032038]	6129801.237
ZTNB	0.10	1500	3	0.6	5209.950	[4482, 7245]	[4707, 4893]	3897.349
ZTNB	0.10	1500	3	1.0	3459.581	[3470, 3839]	[3715, 3590]	1983.031
ZTNB	0.10	2500	1	0.2	2429772.685	[4197017, 1594002]	[4472027, 2592122]	2763209.429
ZTNB	0.10	2500	1	0.6	1057616.727	[4529705, 4311378]	[2508663, 4399290]	3006716.925
ZTNB	0.10	2500	1	1.0	26943.816	[6707, 8134]	[5964, 7395]	306165.410
ZTNB	0.10	2500	2	0.2	7686258.180	[5209232, 6458253]	[2521865, 3338123]	8528659.981
ZTNB	0.10	2500	2	0.6	9865.002	[12576, 6888]	[10647, 7047]	8185.990
ZTNB	0.10	2500	2	1.0	5732.032	[6155, 6207]	[5681, 6197]	3286.507
ZTNB	0.10	2500	3	0.2	9565636.374	[2529247, 4239033]	[3015632, 12425508]	27959586.052
ZTNB	0.10	2500	3	0.6	8453.384	[10302, 12168]	[9546, 10052]	6077.336
ZTNB	0.10	2500	3	1.0	5746.936	[5775, 6502]	[5266, 5462]	3271.592

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZTOINB0.00	500		1	0.2	24611.091	[364, 294]	[195, 242]	134673.144
ZTOINB0.00	500		1	0.6	947.486	[462, 205]	[537, 538]	10753.109
ZTOINB0.00	500		1	1.0	609.999	[373, 423]	[958, 356]	5776.295
ZTOINB0.00	500		2	0.2	477.847	[729, 360]	[327, 506]	209.031
ZTOINB0.00	500		2	0.6	466.658	[558, 518]	[477, 447]	74.064
ZTOINB0.00	500		2	1.0	472.283	[435, 382]	[373, 464]	59.458
ZTOINB0.00	500		3	0.2	473.513	[477, 439]	[509, 475]	75.573
ZTOINB0.00	500		3	0.6	484.480	[446, 509]	[467, 519]	37.142
ZTOINB0.00	500		3	1.0	488.823	[507, 485]	[490, 467]	27.931
ZTOINB0.00	1500		1	0.2	11577.799	[726, 1342]	[873, 1163]	159492.620
ZTOINB0.00	1500		1	0.6	1340.071	[1138, 1538]	[823, 1052]	402.839
ZTOINB0.00	1500		1	1.0	1364.131	[1486, 977]	[1386, 1347]	315.151
ZTOINB0.00	1500		2	0.2	1403.031	[1388, 1237]	[1394, 1283]	265.331
ZTOINB0.00	1500		2	0.6	1441.359	[1513, 1447]	[1655, 1398]	132.776
ZTOINB0.00	1500		2	1.0	1445.259	[1701, 1301]	[1453, 1512]	111.555
ZTOINB0.00	1500		3	0.2	1448.937	[1451, 1336]	[1459, 1398]	139.701
ZTOINB0.00	1500		3	0.6	1472.927	[1532, 1421]	[1491, 1467]	66.963
ZTOINB0.00	1500		3	1.0	1479.507	[1476, 1489]	[1529, 1396]	52.285
ZTOINB0.00	2500		1	0.2	6226.071	[2649, 2039]	[1110, 1830]	118448.564
ZTOINB0.00	2500		1	0.6	2271.436	[2164, 1368]	[1781, 2301]	538.212
ZTOINB0.00	2500		1	1.0	2285.911	[1895, 1863]	[2575, 2355]	450.518
ZTOINB0.00	2500		2	0.2	2373.567	[2228, 2759]	[2440, 2352]	351.802
ZTOINB0.00	2500		2	0.6	2413.290	[2517, 2373]	[2186, 2532]	182.334
ZTOINB0.00	2500		2	1.0	2431.403	[2589, 2446]	[2471, 2388]	148.602
ZTOINB0.00	2500		3	0.2	2423.870	[2404, 2592]	[2253, 2630]	184.799
ZTOINB0.00	2500		3	0.6	2459.074	[2481, 2473]	[2462, 2445]	90.354
ZTOINB0.00	2500		3	1.0	2468.601	[2524, 2483]	[2460, 2428]	73.233
ZTOINB0.05	500		1	0.2	98370.010	[248, 1074]	[338, 4239]	258245.962
ZTOINB0.05	500		1	0.6	10932.634	[330220, 543]	[191, 195]	80743.239
ZTOINB0.05	500		1	1.0	1854.059	[198, 736]	[193, 1059]	23012.094
ZTOINB0.05	500		2	0.2	44447.196	[1852, 704]	[477, 407]	237579.806
ZTOINB0.05	500		2	0.6	529.315	[336, 547]	[575, 474]	158.385
ZTOINB0.05	500		2	1.0	513.264	[713, 447]	[663, 454]	113.822
ZTOINB0.05	500		3	0.2	1094.735	[842, 461]	[497, 386]	16138.681
ZTOINB0.05	500		3	0.6	510.155	[470, 468]	[429, 558]	73.245
ZTOINB0.05	500		3	1.0	504.922	[489, 486]	[495, 546]	52.622
ZTOINB0.05	1500		1	0.2	216681.160	[1688, 685]	[809, 765]	629539.124
ZTOINB0.05	1500		1	0.6	1921.185	[1280, 34212]	[1381, 1399]	1981.958
ZTOINB0.05	1500		1	1.0	1609.735	[2517, 1380]	[2011, 1177]	694.436
ZTOINB0.05	1500		2	0.2	5617.672	[1612, 1343]	[6310, 1504]	103602.567
ZTOINB0.05	1500		2	0.6	1544.735	[1546, 1406]	[2279, 1188]	282.424
ZTOINB0.05	1500		2	1.0	1531.355	[1497, 1265]	[1783, 1342]	207.827
ZTOINB0.05	1500		3	0.2	1527.638	[1767, 1291]	[1353, 1522]	255.933
ZTOINB0.05	1500		3	0.6	1512.273	[1689, 1493]	[1789, 1469]	109.354
ZTOINB0.05	1500		3	1.0	1503.401	[1539, 1486]	[1377, 1544]	84.970
ZTOINB0.05	2500		1	0.2	269516.389	[1400, 3222]	[1406, 3460]	1036914.237
ZTOINB0.05	2500		1	0.6	3042.101	[2054, 3735]	[3050, 1966]	2060.838
ZTOINB0.05	2500		1	1.0	2636.906	[1620, 2211]	[2749, 3501]	871.154
ZTOINB0.05	2500		2	0.2	3376.527	[1988, 3301]	[4656, 1923]	20304.983
ZTOINB0.05	2500		2	0.6	2562.679	[2360, 2407]	[2822, 2677]	365.353
ZTOINB0.05	2500		2	1.0	2519.970	[2137, 2879]	[2428, 2152]	267.150
ZTOINB0.05	2500		3	0.2	2551.528	[3092, 2135]	[3059, 3198]	332.190

Type	$p$	$N$	$\lambda$	$k$	$\bar{N}$	90% CI	99% CI	RMSE
ZTOINB0.05	2500	2500	3	0.6	2504.589	[2619, 2535]	[2495, 2364]	135.097
ZTOINB0.05	2500	2500	3	1.0	2504.412	[2317, 2649]	[2504, 2453]	110.600
ZTOINB0.10	500	500	1	0.2	201493.288	[212, 243]	[351, 1441]	2551043.009
ZTOINB0.10	500	500	1	0.6	35048.311	[172482, 261]	[518, 231]	133672.219
ZTOINB0.10	500	500	1	1.0	8895.363	[294, 1469]	[273, 415]	59664.557
ZTOINB0.10	500	500	2	0.2	64624.419	[359, 331]	[424, 459]	294360.688
ZTOINB0.10	500	500	2	0.6	981.511	[1045, 503]	[624, 315]	12244.160
ZTOINB0.10	500	500	2	1.0	532.985	[310, 418]	[515, 479]	164.038
ZTOINB0.10	500	500	3	0.2	4036.689	[495, 439]	[1295, 599]	91319.338
ZTOINB0.10	500	500	3	0.6	512.854	[488, 667]	[435, 472]	83.996
ZTOINB0.10	500	500	3	1.0	508.511	[503, 464]	[486, 574]	63.254
ZTOINB0.10	1500	1500	1	0.2	309407.995	[21389, 1094]	[1582, 2078]	1608069.597
ZTOINB0.10	1500	1500	1	0.6	64202.728	[2590, 966]	[2410, 24177]	572321.174
ZTOINB0.10	1500	1500	1	1.0	3901.053	[1353, 3004]	[689, 1631]	33974.438
ZTOINB0.10	1500	1500	2	0.2	14344.668	[1817, 2459]	[952, 1341]	223185.278
ZTOINB0.10	1500	1500	2	0.6	1538.184	[1455, 1422]	[1671, 1367]	315.391
ZTOINB0.10	1500	1500	2	1.0	1532.347	[1409, 1221]	[1544, 1620]	241.312
ZTOINB0.10	1500	1500	3	0.2	1546.068	[1579, 1302]	[1316, 1449]	291.305
ZTOINB0.10	1500	1500	3	0.6	1508.157	[1358, 1453]	[1432, 1411]	125.315
ZTOINB0.10	1500	1500	3	1.0	1503.648	[1658, 1524]	[1492, 1424]	94.177
ZTOINB0.10	2500	2500	1	0.2	315052.917	[1853, 924101]	[1537, 1589]	1018026.020
ZTOINB0.10	2500	2500	1	0.6	28693.244	[15583, 2436]	[1915, 8223]	270410.813
ZTOINB0.10	2500	2500	1	1.0	3008.821	[1286, 1460]	[2399, 2279]	1994.222
ZTOINB0.10	2500	2500	2	0.2	8760.400	[2717, 1844]	[2571, 2935]	191514.395
ZTOINB0.10	2500	2500	2	0.6	2557.521	[2961, 2004]	[2275, 3092]	380.093
ZTOINB0.10	2500	2500	2	1.0	2531.076	[2574, 3185]	[2185, 2470]	288.322
ZTOINB0.10	2500	2500	3	0.2	2540.408	[2582, 2182]	[2560, 2637]	345.400
ZTOINB0.10	2500	2500	3	0.6	2508.892	[2635, 2472]	[2460, 2258]	150.571
ZTOINB0.10	2500	2500	3	1.0	2500.814	[2706, 2538]	[2494, 2468]	117.477