

Table S4. Frequencies (percentages) of data-generating models which were correctly matched by the AIC-best log-linear models.

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model					
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t	
1,000	0.025	\mathcal{M}_b	3	49 (16.1)	17 (5.6)	1 (0.3)	0 (0.0)	21 (6.9)	
			4	45 (14.8)	31 (10.2)	5 (1.6)	0 (0.0)	26 (8.5)	
			5	57 (18.7)	27 (8.9)	0 (0.0)	0 (0.0)	26 (8.5)	
			\mathcal{M}_{bh}	3	51 (16.5)	18 (5.8)	3 (1.0)	1 (0.3)	19 (6.1)
				4	57 (18.4)	26 (8.4)	8 (2.6)	0 (0.0)	26 (8.4)
				5	53 (17.1)	25 (8.1)	3 (1.0)	0 (0.0)	20 (6.5)
			\mathcal{M}_h	3	56 (16.3)	19 (5.5)	16 (4.7)	5 (1.5)	14 (4.1)
				4	46 (13.4)	38 (11.1)	12 (3.5)	0 (0.0)	25 (7.3)
				5	37 (10.8)	35 (10.2)	15 (4.4)	4 (1.2)	21 (6.1)
		\mathcal{M}_{ht}	3	62 (19.0)	26 (8.0)	3 (0.9)	0 (0.0)	15 (4.6)	
			4	48 (14.7)	40 (12.3)	2 (0.6)	0 (0.0)	25 (7.7)	
			5	46 (14.1)	32 (9.8)	1 (0.3)	0 (0.0)	26 (8.0)	
		\mathcal{M}_t	3	56 (5.1)	103 (9.4)	0 (0.0)	4 (0.4)	182 (16.7)	
			4	16 (1.5)	49 (4.5)	0 (0.0)	13 (1.2)	289 (26.5)	
			5	7 (0.6)	26 (2.4)	0 (0.0)	4 (0.4)	342 (31.3)	
		0.050	\mathcal{M}_b	3	45 (14.2)	16 (5.0)	11 (3.5)	0 (0.0)	16 (5.0)
				4	41 (12.9)	31 (9.8)	9 (2.8)	3 (0.9)	27 (8.5)
				5	66 (20.8)	28 (8.8)	1 (0.3)	1 (0.3)	22 (6.9)
			\mathcal{M}_{bh}	3	62 (14.2)	16 (3.7)	24 (5.5)	4 (0.9)	24 (5.5)
				4	70 (16.1)	31 (7.1)	17 (3.9)	4 (0.9)	22 (5.0)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	76 (17.4)	32 (7.3)	27 (6.2)	6 (1.4)	21 (4.8)
		\mathcal{M}_h	3	43 (8.9)	19 (3.9)	39 (8.0)	3 (0.6)	26 (5.4)
			4	48 (9.9)	27 (5.6)	70 (14.4)	10 (2.1)	20 (4.1)
			5	48 (9.9)	28 (5.8)	71 (14.6)	7 (1.4)	26 (5.4)
		\mathcal{M}_{ht}	3	45 (11.8)	21 (5.5)	20 (5.3)	6 (1.6)	17 (4.5)
			4	45 (11.8)	34 (8.9)	21 (5.5)	2 (0.5)	19 (5.0)
			5	36 (9.5)	32 (8.4)	66 (17.4)	5 (1.3)	11 (2.9)
		\mathcal{M}_t	3	36 (3.1)	95 (8.2)	0 (0.0)	20 (1.7)	226 (19.4)
			4	8 (0.7)	35 (3.0)	0 (0.0)	27 (2.3)	321 (27.6)
			5	2 (0.2)	12 (1.0)	0 (0.0)	38 (3.3)	345 (29.6)
	0.100	\mathcal{M}_b	3	93 (14.5)	19 (3.0)	13 (2.0)	1 (0.2)	19 (3.0)
			4	105 (16.4)	34 (5.3)	53 (8.3)	5 (0.8)	35 (5.5)
			5	149 (23.2)	47 (7.3)	26 (4.0)	13 (2.0)	30 (4.7)
		\mathcal{M}_{bh}	3	128 (15.0)	25 (2.9)	44 (5.2)	14 (1.6)	24 (2.8)
			4	165 (19.4)	29 (3.4)	34 (4.0)	19 (2.2)	28 (3.3)
			5	222 (26.1)	33 (3.9)	37 (4.3)	17 (2.0)	32 (3.8)
		\mathcal{M}_h	3	34 (4.6)	15 (2.0)	97 (13.1)	10 (1.3)	24 (3.2)
			4	36 (4.9)	21 (2.8)	162 (21.8)	12 (1.6)	15 (2.0)
			5	21 (2.8)	15 (2.0)	251 (33.8)	21 (2.8)	8 (1.1)
		\mathcal{M}_{ht}	3	48 (10.5)	21 (4.6)	75 (16.4)	6 (1.3)	14 (3.1)
			4	40 (8.8)	29 (6.4)	59 (12.9)	4 (0.9)	17 (3.7)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	43 (9.4)	27 (5.9)	49 (10.7)	6 (1.3)	18 (3.9)
		\mathcal{M}_t	3	27 (2.3)	65 (5.5)	0 (0.0)	28 (2.4)	269 (22.8)
			4	2 (0.2)	13 (1.1)	0 (0.0)	52 (4.4)	328 (27.8)
			5	0 (0.0)	4 (0.3)	0 (0.0)	46 (3.9)	347 (29.4)
	0.150	\mathcal{M}_b	3	142 (15.1)	22 (2.3)	37 (3.9)	9 (1.0)	27 (2.9)
			4	228 (24.3)	36 (3.8)	29 (3.1)	10 (1.1)	27 (2.9)
			5	276 (29.4)	47 (5.0)	9 (1.0)	7 (0.7)	33 (3.5)
		\mathcal{M}_{bh}	3	213 (19.0)	28 (2.5)	27 (2.4)	31 (2.8)	41 (3.6)
			4	229 (20.4)	42 (3.7)	22 (2.0)	57 (5.1)	38 (3.4)
			5	224 (19.9)	53 (4.7)	12 (1.1)	82 (7.3)	25 (2.2)
		\mathcal{M}_h	3	27 (2.7)	16 (1.6)	157 (15.9)	24 (2.4)	11 (1.1)
			4	13 (1.3)	6 (0.6)	290 (29.4)	37 (3.8)	4 (0.4)
			5	2 (0.2)	1 (0.1)	362 (36.8)	35 (3.6)	0 (0.0)
		\mathcal{M}_{ht}	3	43 (11.1)	13 (3.4)	55 (14.2)	5 (1.3)	15 (3.9)
			4	36 (9.3)	17 (4.4)	50 (12.9)	4 (1.0)	14 (3.6)
			5	38 (9.8)	15 (3.9)	65 (16.8)	2 (0.5)	15 (3.9)
		\mathcal{M}_t	3	14 (1.2)	50 (4.2)	0 (0.0)	47 (4.0)	283 (23.8)
			4	1 (0.1)	11 (0.9)	0 (0.0)	72 (6.1)	313 (26.3)
			5	0 (0.0)	1 (0.1)	0 (0.0)	60 (5.0)	337 (28.3)
	0.200	\mathcal{M}_b	3	206 (18.6)	32 (2.9)	27 (2.4)	24 (2.2)	33 (3.0)
			4	286 (25.8)	42 (3.8)	5 (0.5)	13 (1.2)	41 (3.7)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	309 (27.9)	50 (4.5)	0 (0.0)	9 (0.8)	30 (2.7)
		\mathcal{M}_{bh}	3	233 (19.5)	28 (2.3)	4 (0.3)	68 (5.7)	59 (4.9)
			4	201 (16.9)	43 (3.6)	1 (0.1)	128 (10.7)	27 (2.3)
			5	138 (11.6)	41 (3.4)	0 (0.0)	210 (17.6)	11 (0.9)
		\mathcal{M}_h	3	17 (1.5)	8 (0.7)	264 (23.0)	59 (5.1)	1 (0.1)
			4	1 (0.1)	1 (0.1)	349 (30.4)	48 (4.2)	0 (0.0)
			5	0 (0.0)	0 (0.0)	367 (32.0)	33 (2.9)	0 (0.0)
		\mathcal{M}_{ht}	3	47 (10.1)	23 (4.9)	54 (11.6)	13 (2.8)	24 (5.2)
			4	50 (10.8)	26 (5.6)	48 (10.3)	7 (1.5)	23 (4.9)
			5	42 (9.0)	24 (5.2)	46 (9.9)	9 (1.9)	29 (6.2)
		\mathcal{M}_t	3	12 (1.0)	46 (3.9)	1 (0.1)	45 (3.8)	291 (24.5)
			4	0 (0.0)	4 (0.3)	0 (0.0)	56 (4.7)	337 (28.3)
			5	0 (0.0)	0 (0.0)	0 (0.0)	64 (5.4)	333 (28.0)
20,000	0.025	\mathcal{M}_b	3	67 (14.5)	13 (2.8)	29 (6.3)	3 (0.7)	19 (4.1)
			4	74 (16.1)	31 (6.7)	12 (2.6)	2 (0.4)	21 (4.6)
			5	96 (20.8)	40 (8.7)	29 (6.3)	1 (0.2)	24 (5.2)
		\mathcal{M}_{bh}	3	74 (11.6)	24 (3.8)	30 (4.7)	7 (1.1)	17 (2.7)
			4	94 (14.7)	32 (5.0)	57 (8.9)	10 (1.6)	23 (3.6)
			5	142 (22.2)	35 (5.5)	56 (8.8)	18 (2.8)	21 (3.3)
		\mathcal{M}_h	3	37 (7.2)	13 (2.5)	77 (14.9)	3 (0.6)	14 (2.7)
			4	50 (9.7)	17 (3.3)	79 (15.3)	5 (1.0)	14 (2.7)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	37 (7.2)	12 (2.3)	137 (26.5)	9 (1.7)	13 (2.5)
		\mathcal{M}_{ht}	3	39 (8.7)	21 (4.7)	19 (4.2)	4 (0.9)	25 (5.6)
			4	45 (10.0)	20 (4.5)	108 (24.1)	10 (2.2)	8 (1.8)
			5	47 (10.5)	22 (4.9)	60 (13.4)	8 (1.8)	13 (2.9)
		\mathcal{M}_t	3	14 (1.2)	66 (5.5)	0 (0.0)	13 (1.1)	306 (25.5)
			4	0 (0.0)	14 (1.2)	0 (0.0)	51 (4.3)	335 (27.9)
			5	0 (0.0)	0 (0.0)	0 (0.0)	66 (5.5)	334 (27.9)
	0.050	\mathcal{M}_b	3	134 (15.8)	23 (2.7)	14 (1.7)	5 (0.6)	24 (2.8)
			4	186 (21.9)	41 (4.8)	31 (3.7)	11 (1.3)	19 (2.2)
			5	259 (30.5)	58 (6.8)	10 (1.2)	9 (1.1)	24 (2.8)
		\mathcal{M}_{bh}	3	204 (18.6)	23 (2.1)	43 (3.9)	26 (2.4)	19 (1.7)
			4	240 (21.9)	46 (4.2)	21 (1.9)	50 (4.6)	27 (2.5)
			5	236 (21.5)	49 (4.5)	5 (0.5)	91 (8.3)	17 (1.5)
		\mathcal{M}_h	3	27 (2.9)	13 (1.4)	133 (14.4)	15 (1.6)	21 (2.3)
			4	23 (2.5)	8 (0.9)	256 (27.7)	34 (3.7)	7 (0.8)
			5	3 (0.3)	1 (0.1)	346 (37.4)	35 (3.8)	2 (0.2)
		\mathcal{M}_{ht}	3	50 (11.6)	19 (4.4)	47 (10.9)	9 (2.1)	17 (3.9)
			4	51 (11.8)	19 (4.4)	45 (10.4)	7 (1.6)	17 (3.9)
			5	55 (12.7)	31 (7.2)	42 (9.7)	3 (0.7)	20 (4.6)
		\mathcal{M}_t	3	2 (0.2)	40 (3.3)	0 (0.0)	33 (2.8)	324 (27.0)
			4	0 (0.0)	2 (0.2)	0 (0.0)	68 (5.7)	330 (27.5)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	0 (0.0)	0 (0.0)	0 (0.0)	64 (5.3)	336 (28.0)
	0.100	\mathcal{M}_b	3	292 (24.6)	32 (2.7)	1 (0.1)	31 (2.6)	31 (2.6)
			4	293 (24.7)	56 (4.7)	0 (0.0)	18 (1.5)	32 (2.7)
			5	303 (25.5)	64 (5.4)	0 (0.0)	9 (0.8)	24 (2.0)
		\mathcal{M}_{bh}	3	183 (15.2)	16 (1.3)	0 (0.0)	144 (12.0)	57 (4.8)
			4	106 (8.8)	19 (1.6)	0 (0.0)	265 (22.1)	10 (0.8)
			5	40 (3.3)	6 (0.5)	0 (0.0)	354 (29.5)	0 (0.0)
		\mathcal{M}_h	3	3 (0.3)	3 (0.3)	345 (29.0)	38 (3.2)	1 (0.1)
			4	0 (0.0)	0 (0.0)	356 (29.9)	44 (3.7)	0 (0.0)
			5	0 (0.0)	0 (0.0)	364 (30.6)	36 (3.0)	0 (0.0)
		\mathcal{M}_{ht}	3	39 (8.9)	17 (3.9)	65 (14.8)	7 (1.6)	13 (3.0)
			4	40 (9.1)	23 (5.2)	64 (14.6)	3 (0.7)	17 (3.9)
			5	40 (9.1)	27 (6.2)	66 (15.0)	4 (0.9)	14 (3.2)
		\mathcal{M}_t	3	0 (0.0)	20 (1.7)	0 (0.0)	61 (5.1)	318 (26.5)
			4	0 (0.0)	0 (0.0)	0 (0.0)	59 (4.9)	341 (28.4)
			5	0 (0.0)	0 (0.0)	0 (0.0)	60 (5.0)	340 (28.4)
	0.150	\mathcal{M}_b	3	281 (23.4)	39 (3.2)	0 (0.0)	31 (2.6)	49 (4.1)
			4	306 (25.5)	67 (5.6)	0 (0.0)	8 (0.7)	19 (1.6)
			5	320 (26.7)	72 (6.0)	0 (0.0)	3 (0.2)	5 (0.4)
		\mathcal{M}_{bh}	3	93 (7.8)	14 (1.2)	0 (0.0)	281 (23.4)	12 (1.0)
			4	15 (1.2)	5 (0.4)	0 (0.0)	380 (31.7)	0 (0.0)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	3 (0.2)	0 (0.0)	0 (0.0)	397 (33.1)	0 (0.0)
		\mathcal{M}_h	3	0 (0.0)	0 (0.0)	354 (29.5)	46 (3.8)	0 (0.0)
			4	0 (0.0)	0 (0.0)	373 (31.1)	27 (2.2)	0 (0.0)
			5	0 (0.0)	0 (0.0)	381 (31.8)	19 (1.6)	0 (0.0)
		\mathcal{M}_{ht}	3	38 (8.4)	21 (4.7)	54 (12.0)	9 (2.0)	16 (3.5)
			4	53 (11.8)	28 (6.2)	49 (10.9)	3 (0.7)	28 (6.2)
			5	46 (10.2)	22 (4.9)	57 (12.6)	5 (1.1)	22 (4.9)
		\mathcal{M}_t	3	1 (0.1)	18 (1.5)	0 (0.0)	55 (4.6)	326 (27.2)
			4	0 (0.0)	1 (0.1)	0 (0.0)	62 (5.2)	337 (28.1)
			5	0 (0.0)	1 (0.1)	0 (0.0)	62 (5.2)	337 (28.1)
	0.200	\mathcal{M}_b	3	295 (24.6)	55 (4.6)	0 (0.0)	14 (1.2)	36 (3.0)
			4	328 (27.3)	65 (5.4)	0 (0.0)	0 (0.0)	7 (0.6)
			5	334 (27.8)	66 (5.5)	0 (0.0)	0 (0.0)	0 (0.0)
		\mathcal{M}_{bh}	3	23 (1.9)	10 (0.8)	0 (0.0)	367 (30.6)	0 (0.0)
			4	0 (0.0)	0 (0.0)	0 (0.0)	400 (33.3)	0 (0.0)
			5	0 (0.0)	0 (0.0)	0 (0.0)	400 (33.3)	0 (0.0)
		\mathcal{M}_h	3	0 (0.0)	0 (0.0)	348 (29.0)	52 (4.3)	0 (0.0)
			4	0 (0.0)	0 (0.0)	352 (29.3)	48 (4.0)	0 (0.0)
			5	0 (0.0)	0 (0.0)	367 (30.6)	33 (2.8)	0 (0.0)
		\mathcal{M}_{ht}	3	35 (8.4)	20 (4.8)	54 (13.0)	4 (1.0)	19 (4.6)
			4	39 (9.4)	22 (5.3)	55 (13.3)	7 (1.7)	14 (3.4)

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Table S4 continued...

N	Expected Pr(Encounter)	Data-generating model	Lists	AIC-best estimating model				
				\mathcal{M}_b	\mathcal{M}_{bh}	\mathcal{M}_h	\mathcal{M}_{ht}	\mathcal{M}_t
			5	47 (11.3)	23 (5.5)	56 (13.5)	7 (1.7)	13 (3.1)
		\mathcal{M}_t	3	2 (0.2)	5 (0.4)	0 (0.0)	63 (5.3)	329 (27.4)
			4	0 (0.0)	0 (0.0)	0 (0.0)	69 (5.8)	331 (27.6)
			5	0 (0.0)	0 (0.0)	0 (0.0)	68 (5.7)	332 (27.7)