

Supplementary material: Simulated datasets

Deterministic Lotka-Volterra model

t	1.1	2.4	3.9	5.6	7.5	9.6	11.9	14.4
x(t)	1.87	0.65	0.22	0.31	1.64	1.15	0.24	2.91
y(t)	0.49	2.62	1.54	0.02	1.14	1.68	1.07	0.88

Initial conditions: $x(0) = 1$, $y(0) = 0.5$

Stochastic Lotka-Volterra model

t	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
x(t)	1026.6	1007.9	998.5	876.6	1064.7	815.7	1047.0	780.0	1156.1	631.1
y(t)	1084.7	1053.9	1050.9	894.4	1258.5	640.8	1686.8	529.8	1937.6	449.0
t	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	
x(t)	1724.0	564.0	1424.8	377.2	2028.0	812.1	903.0	1575.3	466.8	
y(t)	1177.3	560.1	1371.0	815.5	637.6	1338.8	287.2	1631.3	914.6	

Initial conditions: $x(0) = 1000$, $y(0) = 1000$

Deterministic repressilator model

t	0.6	4.2	6.2	8.6	13.4	16.0	21.4	27.6	34.4	39.8	40.6	45.2
$m_1(t)$	2.04	32.19	4.13	2.15	5.09	1.07	3.67	39.01	73.83	8.54	17.62	11.96
$m_2(t)$	28.99	11.29	10.61	55.27	9.49	68.56	10.62	-1.95	3.53	63.87	39.68	-0.60
$m_3(t)$	20.96	7.49	44.25	7.12	60.52	8.10	63.76	22.90	6.27	10.59	6.50	70.56

Initial conditions: $m_1(0) = 0$, $p_1(0) = 2$, $m_2(0) = 0$, $p_2(0) = 1$, $m_3(0) = 0$, $p_3(0) = 3$

Stochastic repressilator model

t	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0
$m_1(t)$	134.0	29.6	52.0	201.6	31.8	50.6	154.2	39.4	90.0	173.1	20.8	122.9
$p_1(t)$	124.3	38.2	54.7	202.2	35.5	47.5	150.7	45.3	85.0	168.9	23.3	114.4
$m_2(t)$	37.3	27.9	162.0	45.4	74.2	150.3	78.2	72.8	154.4	22.9	130.9	153.6
$p_2(t)$	46.7	23.8	166.7	51.5	71.6	136.9	70.1	71.9	155.5	24.7	115.6	148.2
$m_3(t)$	9.6	162.1	32.0	67.4	221.9	43.5	48.7	153.4	20.4	156.1	155.1	51.5
$p_3(t)$	7.1	166.7	40.2	64.1	214.2	49.5	49.7	154.2	24.7	148.5	162.1	54.1
t	52.0	56.0	60.0	64.0	68.0	72.0	76.0					
$m_1(t)$	128.9	31.6	119.4	142.6	68.5	104.6	132.3					
$p_1(t)$	133.8	28.3	110.6	136.7	67.7	93.8	130.4					
$m_2(t)$	60.5	117.6	185.6	46.1	126.8	151.2	52.8					
$p_2(t)$	57.8	116.3	179.6	49.3	113.8	157.3	46.4					
$m_3(t)$	107.3	117.7	30.8	135.1	143.1	56.5	133.7					
$p_3(t)$	116.8	119.2	36.3	123.9	139.9	53.2	126.4					

Initial conditions: $m_1(0) = 0$, $p_1(0) = 2$, $m_2(0) = 0$, $p_2(0) = 1$, $m_3(0) = 0$, $p_3(0) = 3$

SIR models

t	0.6	1	2	3	4	5	6	7	8	9	10	11
S(t)	0.12	0.12	0.10	0.38	1.00	1.20	1.46	1.38	1.57	1.46	1.25	1.56
I(t)	13.17	7.17	2.36	0.92	0.62	0.17	0.28	0.10	0.03	0.29	0.10	0.22
R(t)	9.42	11.19	10.04	6.87	4.45	3.01	1.76	1.29	0.82	0.52	0.23	0.20

Initial conditions: $S(t) = 20$, $I(t) = 10$, $R(t) = 0$