cats_BPH_post.csv_run_6_20250529_141647

May 29, 2025

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/Users/navehr/Dropbox/naveh/weizmann/uri alon/aging/code_3
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Loading file from: /Users/navehr/Dropbox/naveh/weizmann/uri
alon/aging/code_3/baysian02/posterior_csvs_baysian01/cats_BPH_post.csv
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Reading Cats
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1 # 1. Density coner plot

A sample is 1 parameter set scanned. For the corner plot below, the quantiles (represented by the solid lines) are 0.16,0.5,0.84 of the samples. Dots represent individual samples (outside the line surrounding 0.84 of the samples) The parameter search is performed in the transformed space of x_c/η, β/η, x_c^2/ϵ, x_c but we also show the regular parameters

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(25,)
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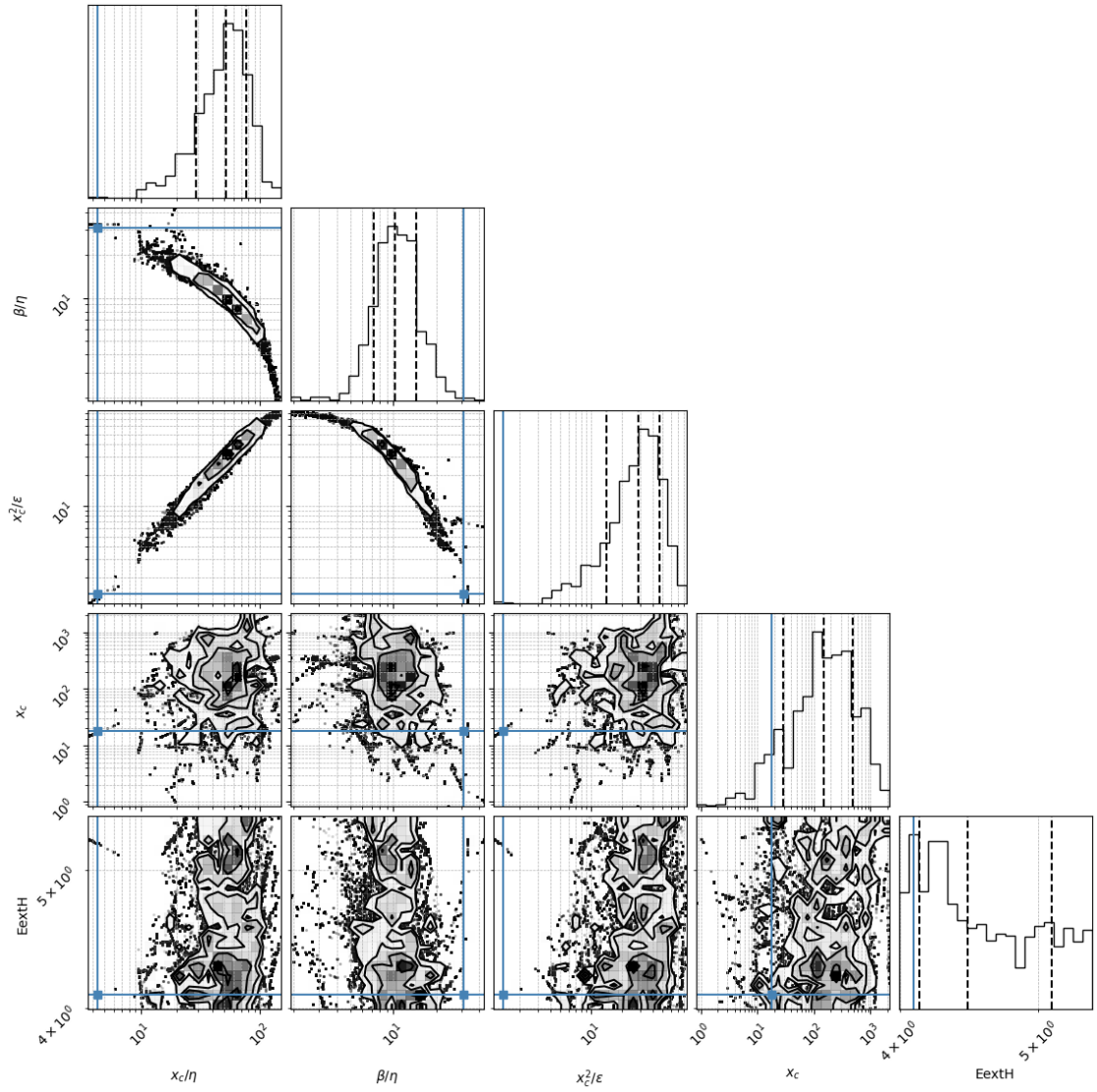
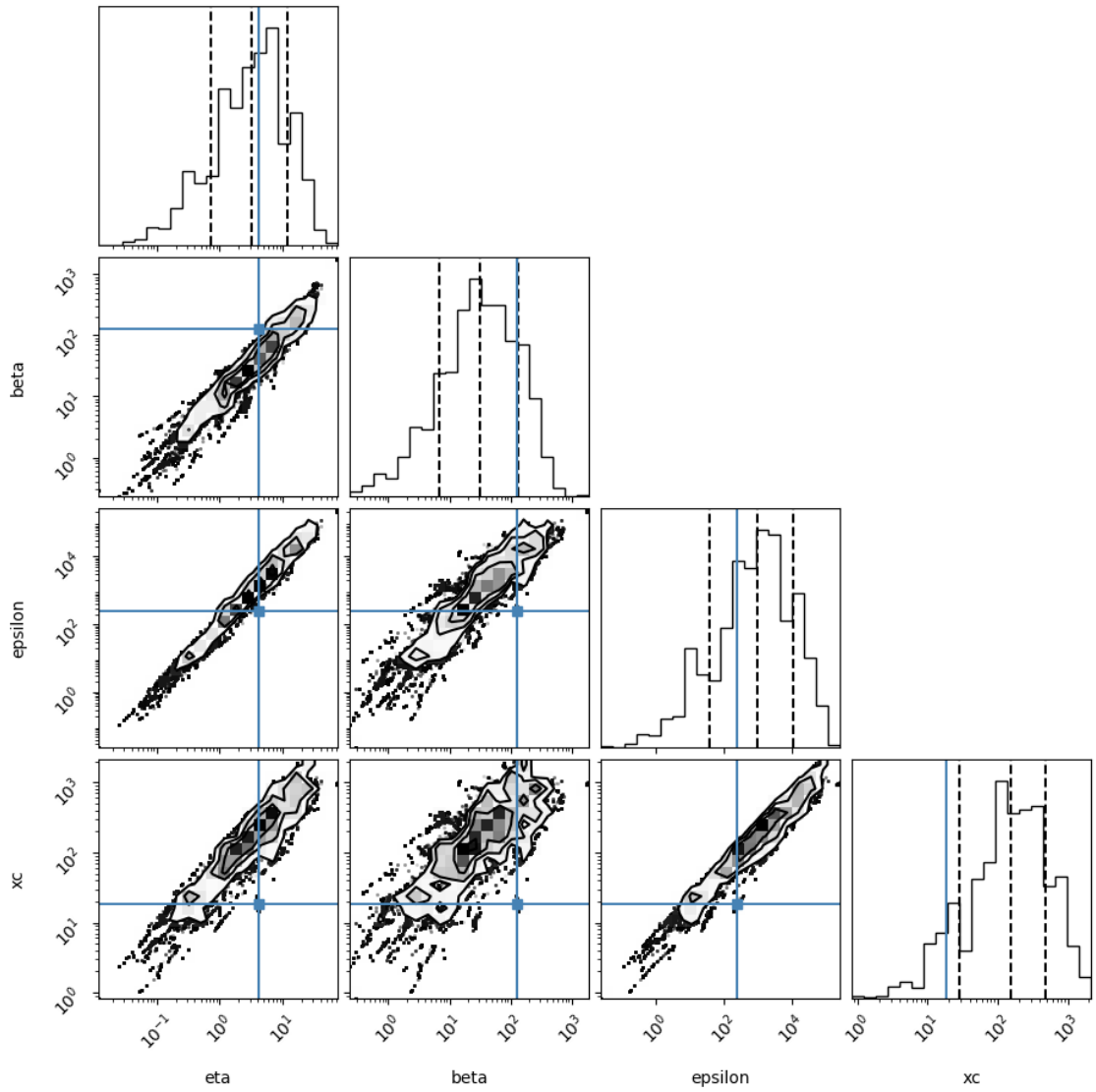
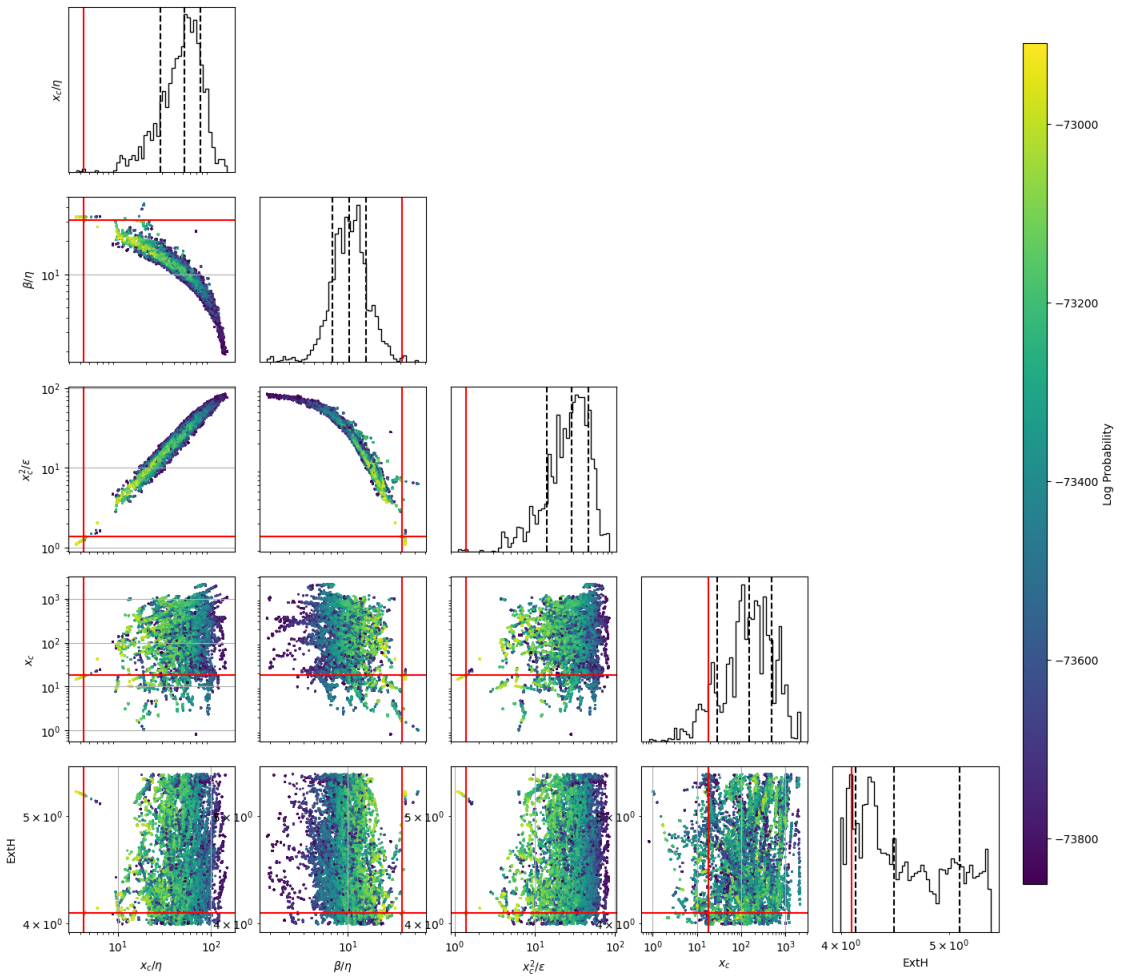

x_c/η
β/η
x_c^2/ε
x_c
EextH



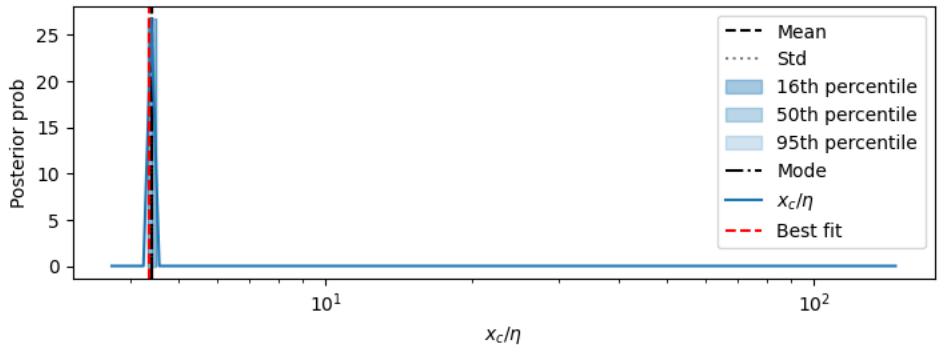
2 2. Heat map corner plot of raw samples

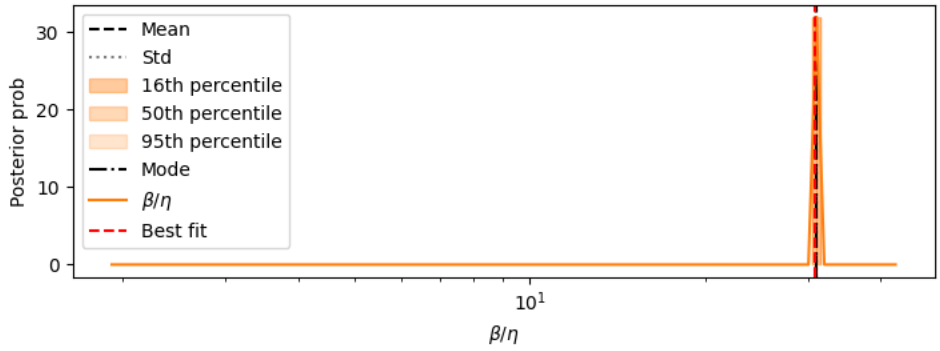
This plot shows all the raw sample points and their lnprobability

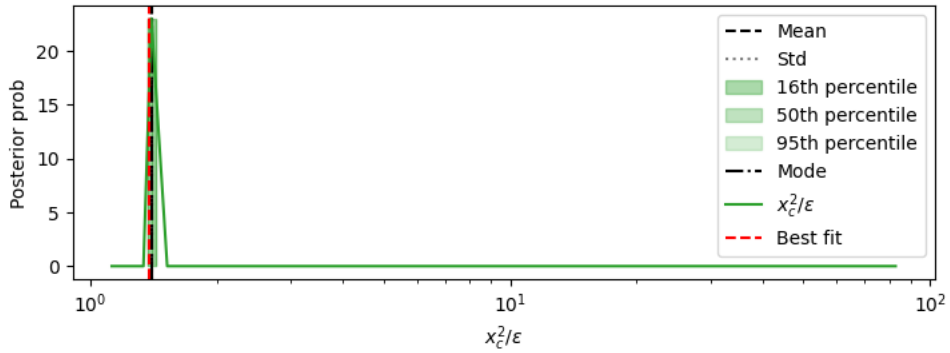


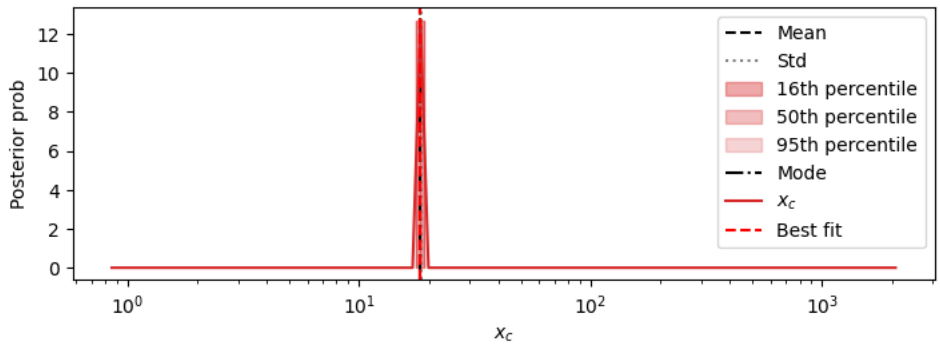
3 3. Posterior distributions of parameters

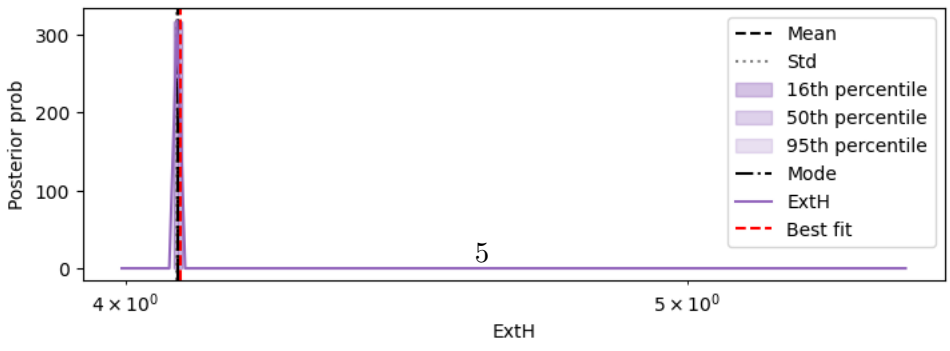
1d marginalizations of posterior distributions. we use a grid of size nbins=100-150


Posterior prob
x_c/η
Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c/η
Best fit

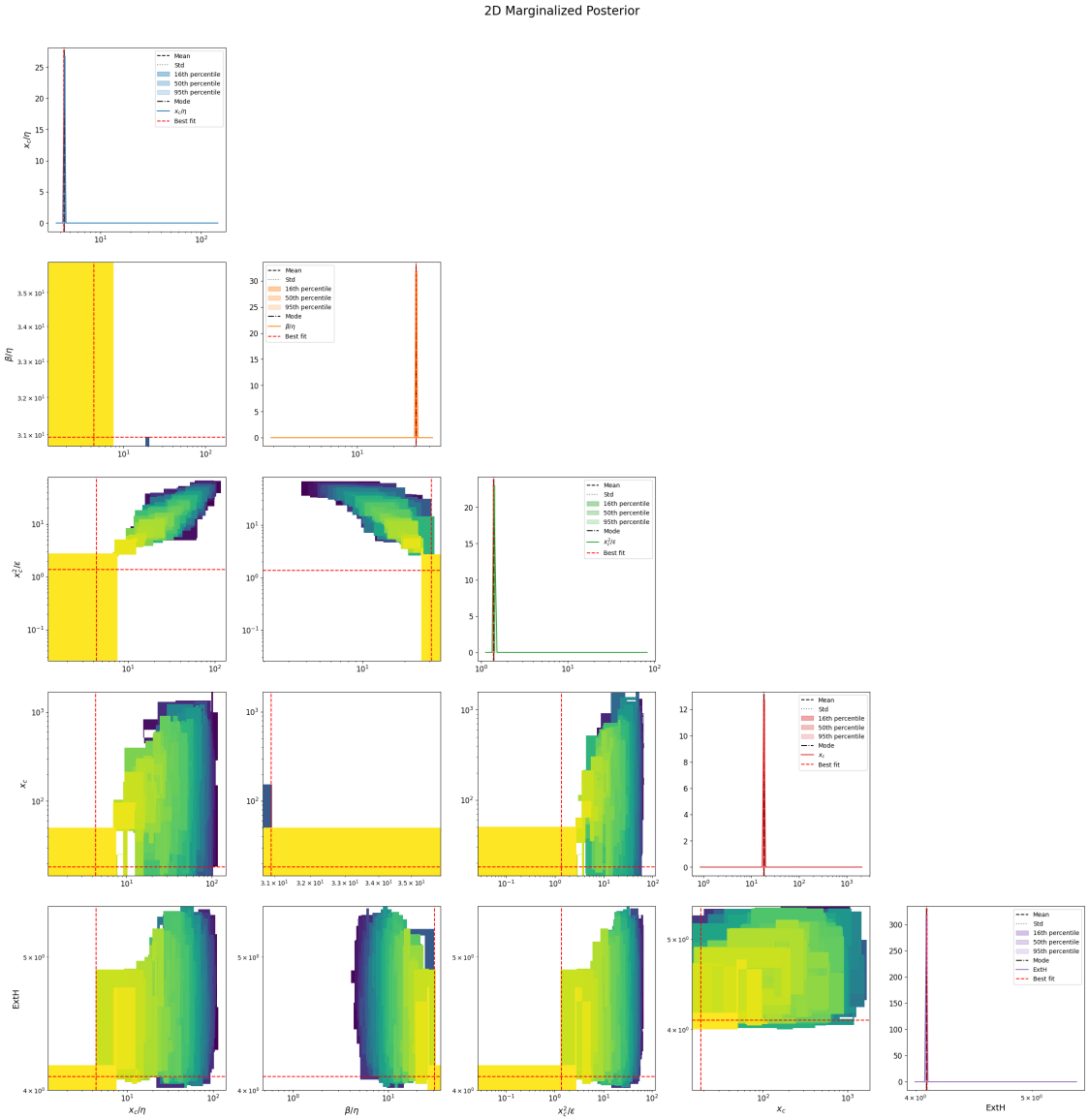

Posterior prob
β/η
Mean
Std
16th percentile
50th percentile
95th percentile
Mode
β/η
Best fit


Posterior prob
x_c^2/ε
Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c^2/ε
Best fit


Posterior prob
x_c
Mean
Std
16th percentile
50th percentile
95th percentile
Mode
x_c
Best fit


Posterior prob
ExtH
Mean
Std
16th percentile
50th percentile
95th percentile
Mode
ExtH
Best fit

2D marginalizations of posterior distributions

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Rescaling the samples TIME by 365
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4 4. Table of results

mode is the marginalized mode, max_likwlihood is the sample with highest likelihood mode_overall is the 4D posterior mode

	mean	std	mode	\
xc/eta	4.402	[0.0147, 0.0147]	3.653	
beta/eta	31.05	[0.0435, 0.0434]	20.03	
xc^2/epsilon	1.397	[0.00566, 0.00564]	1.124	
xc	18.451	[0.103, 0.102]	15.763	
ExtH	4.083	[0.000621, 0.000621]	4.083	
eta	4.35	[1.24e-06, 1.24e-06]	7.353	
beta	133.943	[3.14e-06, 3.14e-06]	133.943	
epsilon	230.498	[0.000163, 0.000163]	1902.04	
sqrt(xc/eta)	2.098	[3.34e-05, 3.34e-05]	1.911	
s= eta^0.5*xc^1.5/epsilon	0.668	[1.46e-05, 1.46e-05]	1.262	
beta*xc/epsilon	9.913	[2.35e-05, 2.35e-05]	8.04	
eta*xc/epsilon	0.386	[0.00392, 0.00388]	0.391	
Fx=beta^2/eta*xc	44.328	[3.698, 3.413]	40.212	
Dx =beta*epsilon/eta*xc^2	5.153	[0.394, 0.366]	5.137	
Pk=beta*k/epsilon	0.278	[0.00202, 0.002]	0.0452	
Fk=beta^2/eta*k	8311.65	[3.884, 3.882]	7436.201	
Dk =beta*epsilon/eta*k^2	32131.448	[91.687, 91.426]	139192.022	
Fk^2/Dk=beta^3/eta*epsilon	2044.746	[6.936, 6.912]	283.861	
epsilon/beta^2	0.0146	[1.28e-08, 1.28e-08]	0.0716	
k/beta	0.00373	[8.74e-11, 8.74e-11]	0.00373	
k^2/epsilon	0.00108	[7.64e-10, 7.64e-10]	0.000131	
best fit_MedianLifetime	12.96	0.51	12.96	
best fit_MaxLifetime	25.0	0	25.0	
data_MedianLifetime	14.0	0.48	14.0	
data_MaxLifetime	16.0	0	16.0	

	percentile_16	\
xc/eta	[3.585, 3.721]	
beta/eta	[19.719, 20.346]	
xc^2/epsilon	[1.1, 1.149]	
xc	[15.154, 16.395]	
ExtH	[4.077, 4.09]	
eta	[7.038, 7.682]	
beta	[128.032, 140.127]	
epsilon	[1753.75, 2062.869]	
sqrt(xc/eta)	[1.893, 1.929]	
s= eta^0.5*xc^1.5/epsilon	[1.246, 1.279]	
beta*xc/epsilon	[7.936, 8.146]	
eta*xc/epsilon	[0.388, 0.393]	
Fx=beta^2/eta*xc	[38.365, 42.148]	
Dx =beta*epsilon/eta*xc^2	[4.955, 5.325]	
Pk=beta*k/epsilon	[0.043, 0.0474]	
Fk=beta^2/eta*k	[7033.681, 7861.757]	
Dk =beta*epsilon/eta*k^2	[128304.791, 151003.083]	
Fk^2/Dk=beta^3/eta*epsilon	[267.845, 300.834]	
epsilon/beta^2	[0.0685, 0.0748]	

```
k/beta                                 [0.00357, 0.0039]
k^2/epsilon                          [0.000121, 0.000142]
best fit_MedianLifetime                    [12.47, 13.47]
best fit_MaxLifetime                         [25.0, 25.0]
data_MedianLifetime                        [13.53, 14.48]
data_MaxLifetime                             [16.0, 16.0]

                                          percentile_50  \
xc/eta                                     [3.585, 3.721]
beta/eta                                  [19.719, 20.346]
xc^2/epsilon                                 [1.1, 1.149]
xc                                        [15.154, 16.395]
ExtH                                         [4.077, 4.09]
eta                                        [7.038, 7.682]
beta                                     [128.032, 140.127]
epsilon                                 [1753.75, 2062.869]
sqrt(xc/eta)                               [1.893, 1.929]
s= eta^0.5*xc^1.5/epsilon                  [1.246, 1.279]
beta*xc/epsilon                            [7.936, 8.146]
eta*xc/epsilon                             [0.388, 0.393]
Fx=beta^2/eta*xc                          [38.365, 42.148]
Dx =beta*epsilon/eta*xc^2                  [4.955, 5.325]
Pk=beta*k/epsilon                         [0.043, 0.0474]
Fk=beta^2/eta*k                         [7033.681, 7861.757]
Dk =beta*epsilon/eta*k^2    [128304.791, 151003.083]
Fk^2/Dk=beta^3/eta*epsilon               [267.845, 300.834]
epsilon/beta^2                             [0.0685, 0.0817]
k/beta                                    [0.00357, 0.0039]
k^2/epsilon                             [0.000121, 0.000142]
best fit_MedianLifetime                    [12.47, 13.47]
best fit_MaxLifetime                         [25.0, 25.0]
data_MedianLifetime                        [13.53, 14.48]
data_MaxLifetime                             [16.0, 16.0]

                                          percentile_95 max_likelihood  \
xc/eta                                     [3.585, 3.721]          4.356
beta/eta                                  [19.111, 20.993]         30.923
xc^2/epsilon                                 [1.1, 4.417]          1.381
xc                                        [15.154, 16.395]          18.27
ExtH                                         [4.064, 4.09]          4.089
eta                                        [4.163, 9.988]          4.194
beta                                     [128.032, 153.365]        129.681
epsilon                                 [1490.952, 2062.869]        241.772
sqrt(xc/eta)                               [1.893, 1.929]          2.087
s= eta^0.5*xc^1.5/epsilon                  [1.215, 1.279]          0.661
beta*xc/epsilon                            [7.936, 8.362]          9.799
eta*xc/epsilon                             [0.384, 0.393]          0.317
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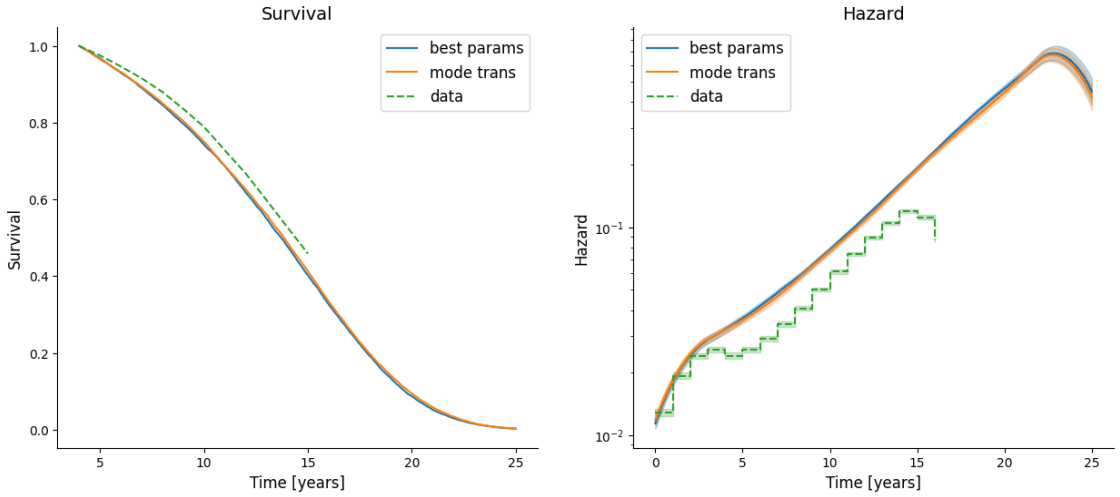
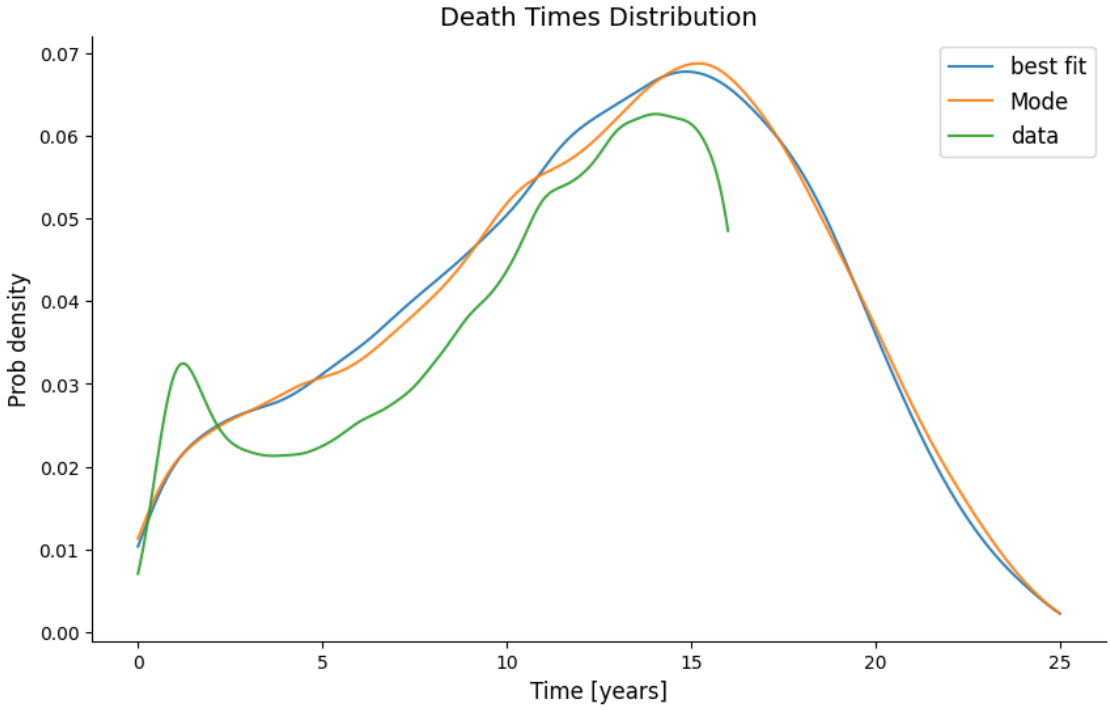
Fx=beta^2/eta*xc	[38.365, 46.304]	219.496
Dx =beta*epsilon/eta*xc^2	[4.611, 5.325]	22.399
Pk=beta*k/epsilon	[0.0391, 0.0521]	0.268
Fk=beta^2/eta*k	[7033.681, 8787.323]	8020.219
Dk =beta*epsilon/eta*k^2	[128304.791, 151003.083]	29905.085
Fk^2/Dk=beta^3/eta*epsilon	[267.845, 337.886]	2150.936
epsilon/beta^2	[0.0627, 0.0975]	0.0144
k/beta	[0.00326, 0.0039]	0.00386
k^2/epsilon	[0.000121, 0.000167]	0.00103
best fit_MedianLifetime	[12.47, 13.47]	12.96
best fit_MaxLifetime	[25.0, 25.0]	25.0
data_MedianLifetime	[13.53, 14.48]	14.0
data_MaxLifetime	[16.0, 16.0]	16.0

	mode_overall
xc/eta	4.356
beta/eta	30.923
xc^2/epsilon	1.381
xc	18.27
ExtH	4.089
eta	4.194
beta	129.681
epsilon	241.772
sqrt(xc/eta)	2.087
s= eta^0.5*xc^1.5/epsilon	0.661
beta*xc/epsilon	9.799
eta*xc/epsilon	0.386
Fx=beta^2/eta*xc	43.474
Dx =beta*epsilon/eta*xc^2	5.206
Pk=beta*k/epsilon	0.268
Fk=beta^2/eta*k	8020.219
Dk =beta*epsilon/eta*k^2	29905.085
Fk^2/Dk=beta^3/eta*epsilon	2150.936
epsilon/beta^2	0.0144
k/beta	0.00386
k^2/epsilon	0.00103
best fit_MedianLifetime	NaN
best fit_MaxLifetime	NaN
data_MedianLifetime	NaN
data_MaxLifetime	NaN

5 5. Fits of simulations to data

best params is the sample with highest likelihood. mode trans is the 4D posterior mode in the transformed space of x_c/η, β/η, x_c^2/ϵ, x_c


Survival
best params
mode trans
data
Survival
Time [years]
Hazard
best params
mode trans
data
Hazard
Time [years]


Death Times Distribution
best fit
Mode
data
Prob density
Time [years]