Denmark_M_1900_post.csv_run_16_20250525_213912

May 25, 2025

`/Users/navehr/Dropbox/naveh/weizmann/uri alon/aging/code_3`

`Loading file from: /Users/navehr/Dropbox/naveh/weizmann/uri alon/aging/code_3/ba`
`ysian02/posterior_csvs_baysian01/HUMANS/Denmark_M_1900_post.csv`

`Reading Humans_M`

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

`(25,)`
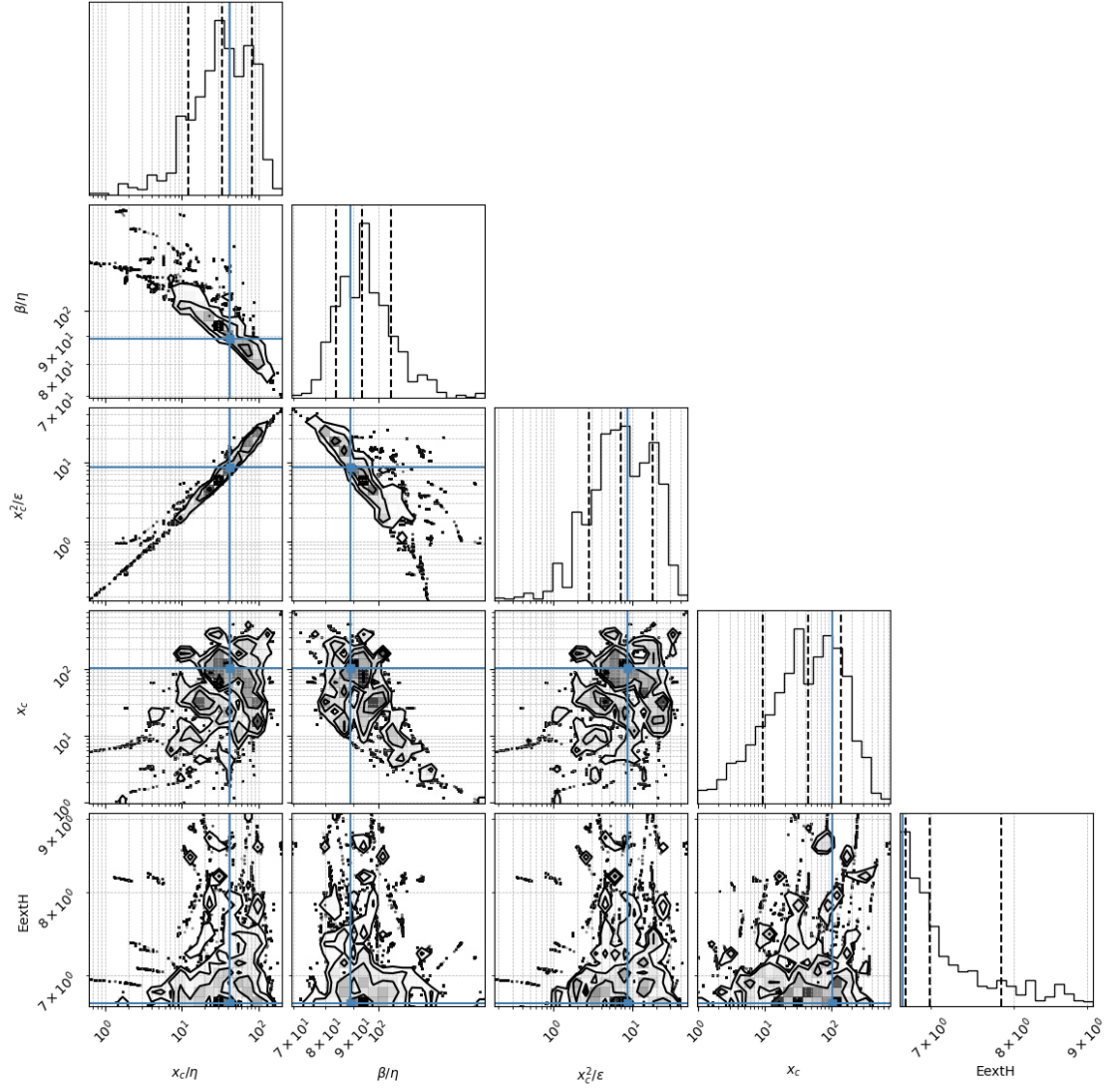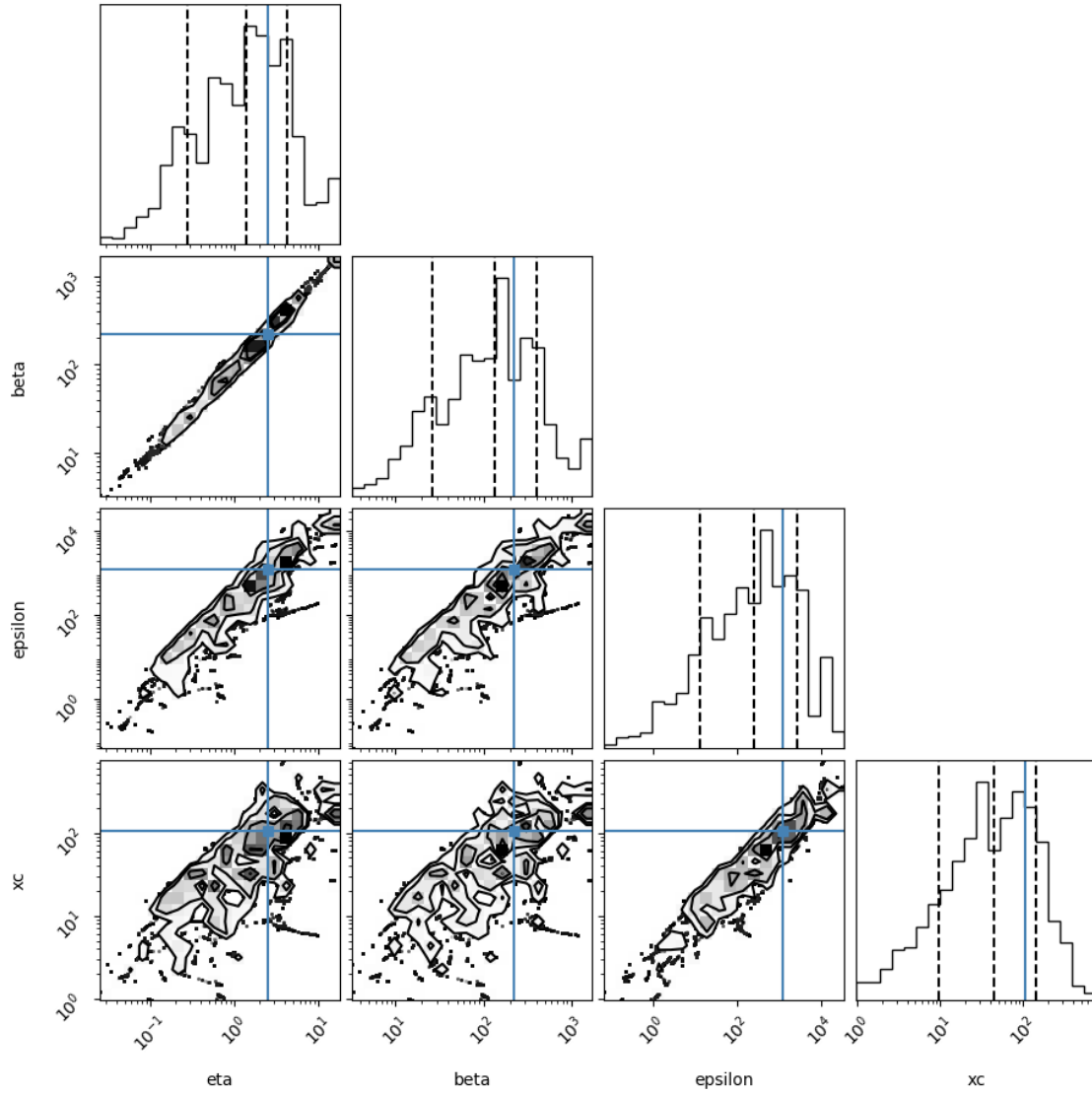
2 2. Heat map corner plot of raw samples

This plot shows all the raw sample points and their lnprobability
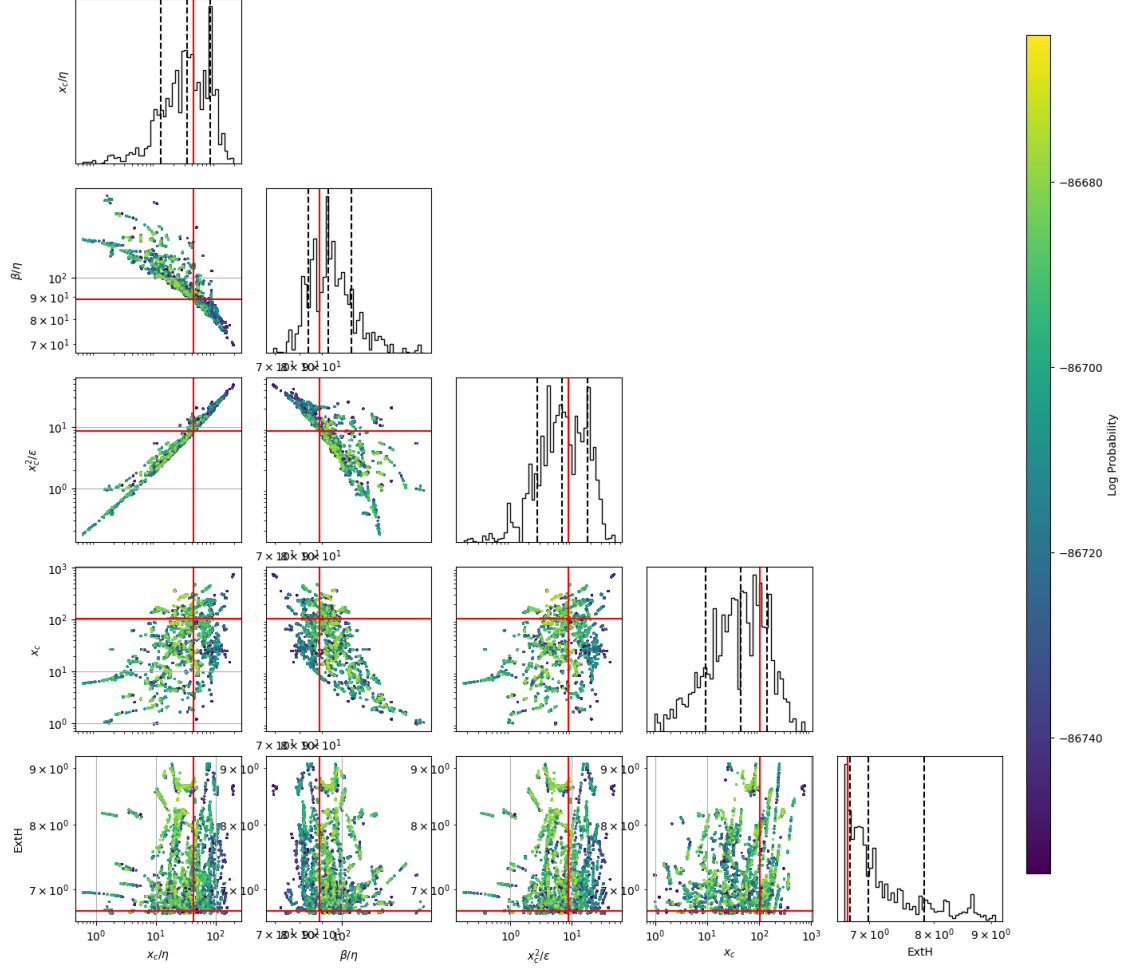
3 3. Posterior distributions of parameters

1d marginalizations of posterior distributions. we use a grid of size nbins=100-150
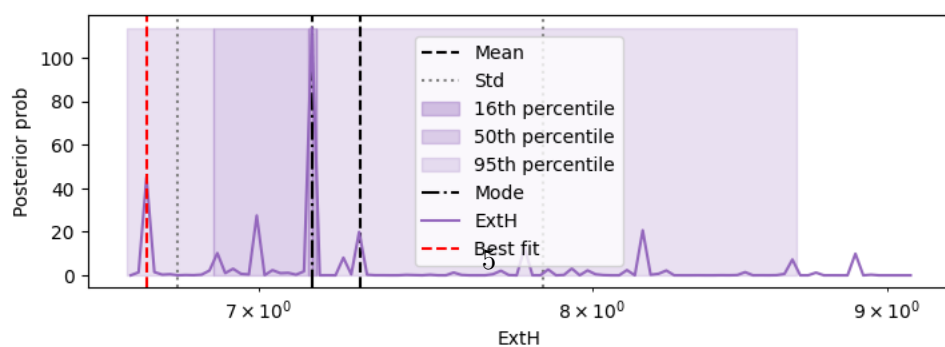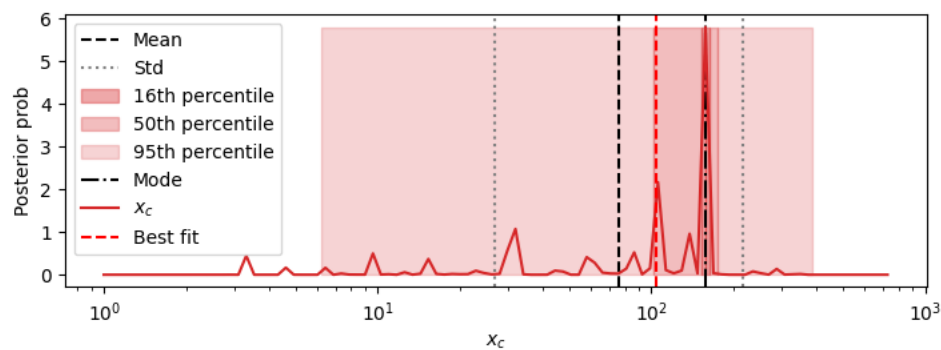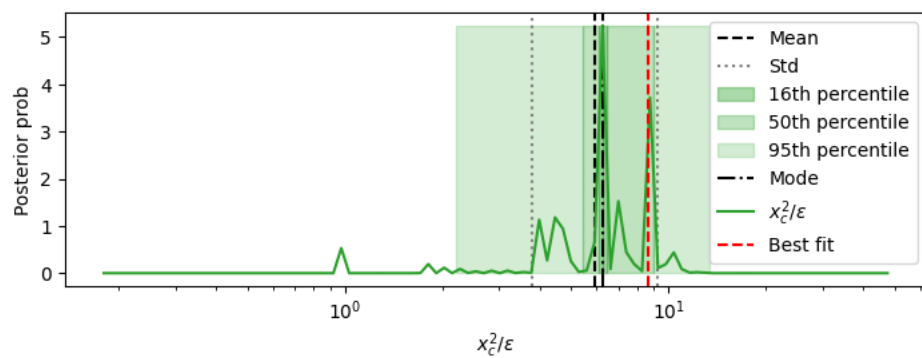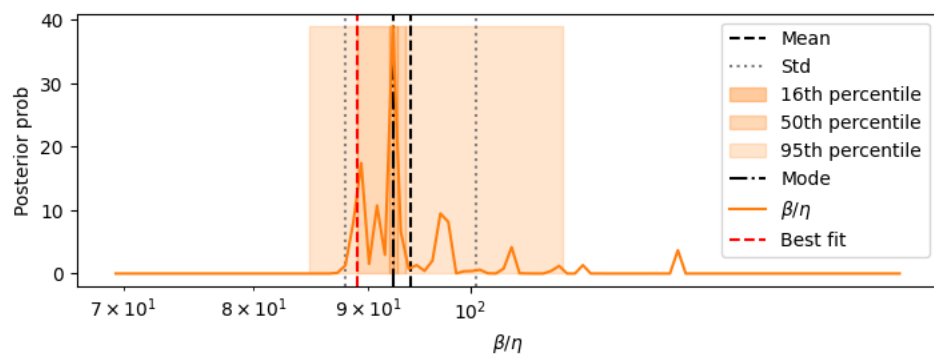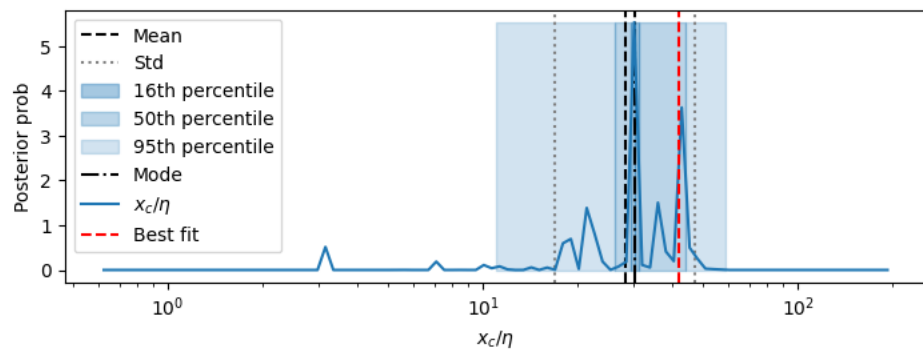
2D marginalizations of posterior distributions

2D Marginalized Posterior

Rescaling the samples TIME by 365

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

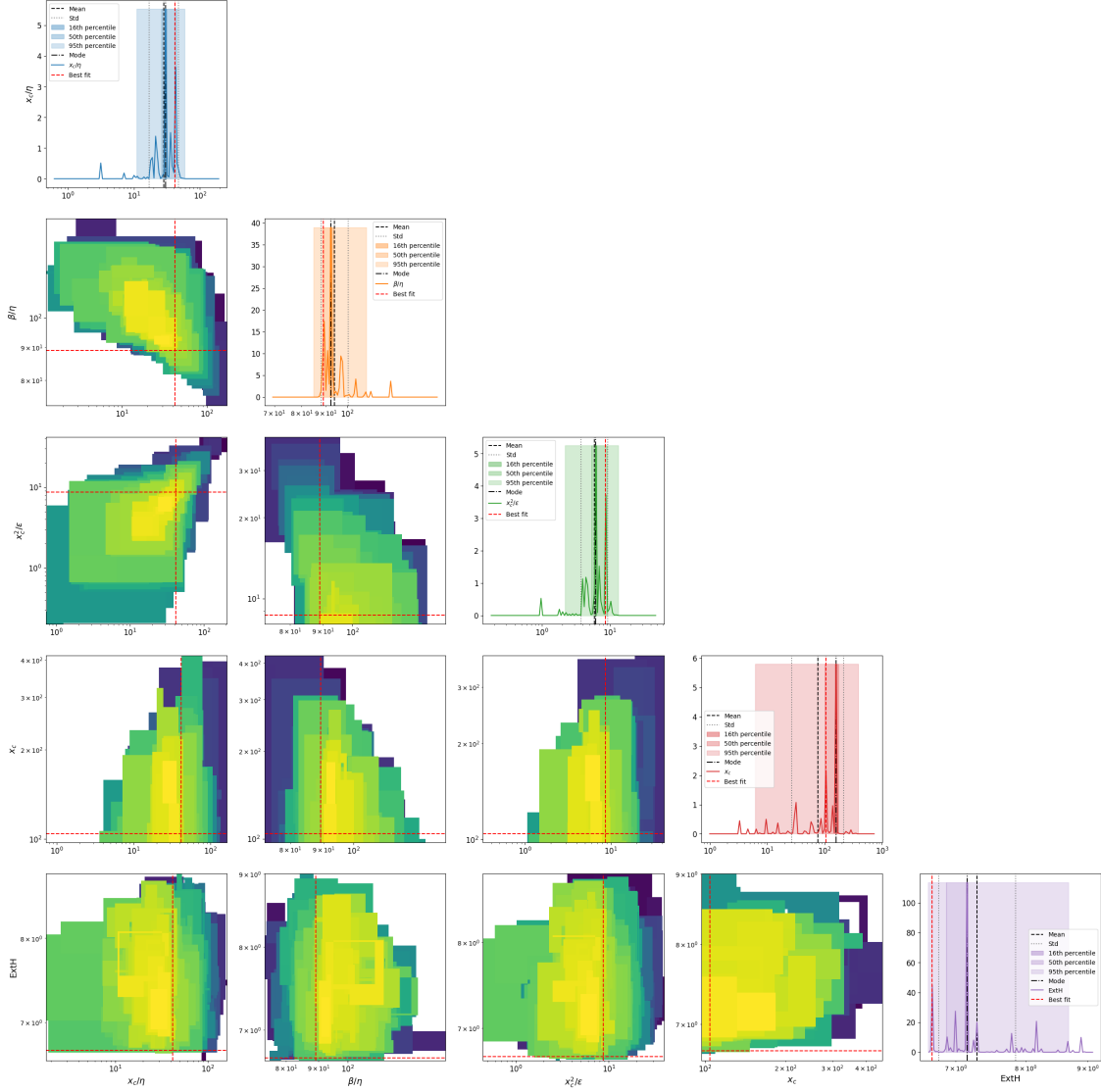|	mean	std
xc/eta	28.27	[18.831, 11.302]
beta/eta	94.029	[6.49, 6.071]
xc^2/epsilon	5.922	[3.368, 2.147]
xc	75.754	[139.268, 49.065]
ExtH	7.289	[0.553, 0.514]
eta	2.828	[3.518, 1.568]
beta	267.322	[324.71, 146.617]
epsilon	1075.967	[5047.851, 886.917]
sqrt(xc/eta)	5.22	[1.466, 1.145]
s= eta^0.5*xc^1.5/epsilon	1.083	[0.227, 0.188]
beta*xc/epsilon	19.717	[2.941, 2.559]
eta*xc/epsilon	0.222	[0.0177, 0.0164]
Fx=beta^2/eta*xc	631.488	[660.665, 322.873]
Dx =beta*epsilon/eta*xc^2	27.703	[21.317, 12.047]
Pk=beta*k/epsilon	0.122	[0.209, 0.077]
Fk=beta^2/eta*k	49422.87	[59030.033, 26900.466]
Dk =beta*epsilon/eta*k^2	349314.743	[1990531.769, 297165.686]
Fk^2/Dk=beta^3/eta*epsilon	6442.275	[7500.425, 3465.598]
beta^2/epsilon	38.288	[3.822, 3.475]
k/beta	0.00222	[0.000253, 0.000227]
k/epsilon	0.000399	[0.000104, 8.22e-05]
best fit_MedianLifetime	71.29	0.51
best fit_MaxLifetime	105.84	0
data_MedianLifetime	70.0	0.51
data_MaxLifetime	104.0	0

	mode
xc/eta	40.366
beta/eta	91.57
xc^2/epsilon	6.62
xc	137.988
ExtH	6.908
eta	4.69
beta	448.398
epsilon	1631.164
sqrt(xc/eta)	6.353
s= eta^0.5*xc^1.5/epsilon	1.114
beta*xc/epsilon	19.205
eta*xc/epsilon	0.205
Fx=beta^2/eta*xc	188.48
Dx =beta*epsilon/eta*xc^2	13.716
Pk=beta*k/epsilon	0.089
Fk=beta^2/eta*k	87454.937
Dk =beta*epsilon/eta*k^2	1465773.894
Fk^2/Dk=beta^3/eta*epsilon	4443.744
beta^2/epsilon	40.916

```
k/beta                                   0.00238
k/epsilon                                0.000399
best fit_MedianLifetime                  71.29
best fit_MaxLifetime                     105.84
data_MedianLifetime                      70.0
data_MaxLifetime                         104.0


                                              percentile_16  \
xc/eta                                         [39.215, 44.027]
beta/eta                                       [90.459, 91.944]
xc^2/epsilon                                   [6.436, 7.203]
xc                                             [124.865, 152.49]
ExtH                                           [6.897, 6.963]
eta                                            [4.538, 5.176]
beta                                           [407.924, 492.888]
epsilon                                        [1339.056, 1742.063]
sqrt(xc/eta)                                   [6.084, 6.446]
s= eta^0.5*xc^1.5/epsilon                      [1.069, 1.161]
beta*xc/epsilon                                [19.028, 19.383]
eta*xc/epsilon                                 [0.204, 0.206]
Fx=beta^2/eta*xc                               [182.059, 224.151]
Dx =beta*epsilon/eta*xc^2                      [13.297, 15.054]
Pk=beta*k/epsilon                              [0.0784, 0.0928]
Fk=beta^2/eta*k                                [79449.921, 96266.503]
Dk =beta*epsilon/eta*k^2                       [1208690.141, 1777538.372]
Fk^2/Dk=beta^3/eta*epsilon                     [3921.868, 4632.701]
beta^2/epsilon                                 [39.401, 42.488]
k/beta                                         [0.00216, 0.00261]
k/epsilon                                      [0.000373, 0.000426]
best fit_MedianLifetime           [70.80000000000001, 71.80000000000001]
best fit_MaxLifetime                           [105.84, 105.84]
data_MedianLifetime                            [69.5, 70.51]
data_MaxLifetime                               [104.0, 104.0]


                                              percentile_50  \
xc/eta                                         [31.111, 44.027]
beta/eta                                       [89.726, 92.695]
xc^2/epsilon                                   [5.75, 9.023]
xc                                             [89.491, 152.49]
ExtH                                           [6.875, 7.118]
eta                                            [3.058, 5.528]
beta                                           [246.298, 559.149]
epsilon                                        [902.404, 2266.361]
sqrt(xc/eta)                                   [5.419, 6.635]
s= eta^0.5*xc^1.5/epsilon                      [0.933, 1.193]
beta*xc/epsilon                                [18.68, 19.744]
eta*xc/epsilon                                 [0.201, 0.209]
```

```
Fx=beta^2/eta*xc                            [169.864, 317.021]
Dx =beta*epsilon/eta*xc^2                      [9.752, 16.017]
Pk=beta*k/epsilon                                [0.061, 0.11]
Fk=beta^2/eta*k                         [50761.695, 109411.509]
Dk =beta*epsilon/eta*k^2              [432153.101, 2021406.478]
Fk^2/Dk=beta^3/eta*epsilon                [3608.464, 5472.372]
beta^2/epsilon                              [36.539, 49.407]
k/beta                                     [0.00191, 0.00381]
k/epsilon                               [0.000287, 0.000426]
best fit_MedianLifetime     [70.80000000000001, 71.80000000000001]
best fit_MaxLifetime                         [105.84, 105.84]
data_MedianLifetime                            [69.5, 70.51]
data_MaxLifetime                             [104.0, 104.0]


                                             percentile_95  \
xc/eta                                        [18.48, 49.43]
beta/eta                                     [88.278, 98.929]
xc^2/epsilon                                  [3.877, 10.685]
xc                                          [14.811, 317.324]
ExtH                                           [6.641, 8.176]
eta                                            [1.067, 6.306]
beta                                         [57.742, 634.319]
epsilon                                    [19.886, 16304.904]
sqrt(xc/eta)                                   [4.176, 7.031]
s= eta^0.5*xc^1.5/epsilon                      [0.836, 1.445]
beta*xc/epsilon                              [18.339, 20.868]
eta*xc/epsilon                                [0.196, 0.232]
Fx=beta^2/eta*xc                            [158.486, 634.14]
Dx =beta*epsilon/eta*xc^2                     [8.614, 29.783]
Pk=beta*k/epsilon                             [0.0474, 0.822]
Fk=beta^2/eta*k                        [13239.271, 150671.998]
Dk =beta*epsilon/eta*k^2               [8030.876, 2972745.005]
Fk^2/Dk=beta^3/eta*epsilon               [3054.788, 10654.687]
beta^2/epsilon                              [33.884, 131.716]
k/beta                                     [0.00074, 0.00813]
k/epsilon                               [3.06e-05, 0.00306]
best fit_MedianLifetime     [70.80000000000001, 71.80000000000001]
best fit_MaxLifetime                         [105.84, 105.84]
data_MedianLifetime                            [69.5, 70.51]
data_MaxLifetime                             [104.0, 104.0]


                         max_likelihood mode_overall
xc/eta                            41.88       29.971
beta/eta                          89.025      92.175
xc^2/epsilon                       8.692       6.142
xc                               104.469     161.152
ExtH                               6.693       7.158
```
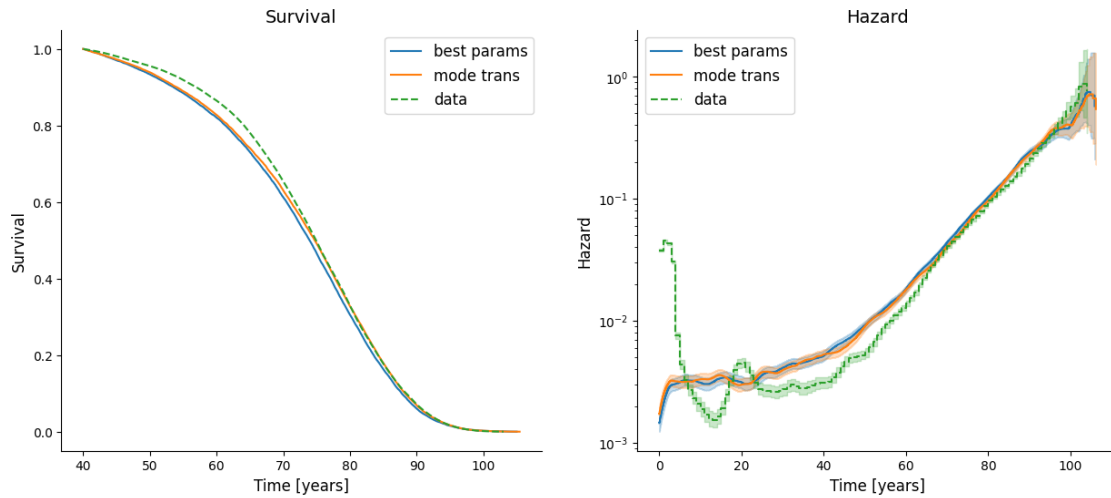
```
eta                                      2.494           5.377
beta                                   222.069         495.618
epsilon                               1255.585        4228.501
sqrt(xc/eta)                             6.472           5.475
s= eta^0.5*xc^1.5/epsilon                1.343           1.122
beta*xc/epsilon                         18.477          18.888
eta*xc/epsilon                           0.208           0.235
Fx=beta^2/eta*xc                       189.24         1091.187
Dx =beta*epsilon/eta*xc^2               10.242          42.571
Pk=beta*k/epsilon                        0.0884          0.0586
Fk=beta^2/eta*k                      39539.488       91367.312
Dk =beta*epsilon/eta*k^2            447114.351     1559050.066
Fk^2/Dk=beta^3/eta*epsilon            3496.58         5354.533
beta^2/epsilon                          39.276          39.276
k/beta                                   0.00225         0.00225
k/epsilon                                0.000398        0.000398
best fit_MedianLifetime                 71.29               NaN
best fit_MaxLifetime                   105.84               NaN
data_MedianLifetime                     70.0                NaN
data_MaxLifetime                       104.0                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

```
Text(0, 0.5, 'Hazard')
```



```
Text(0, 0.5, 'Prob density')
```

Death Times Distribution