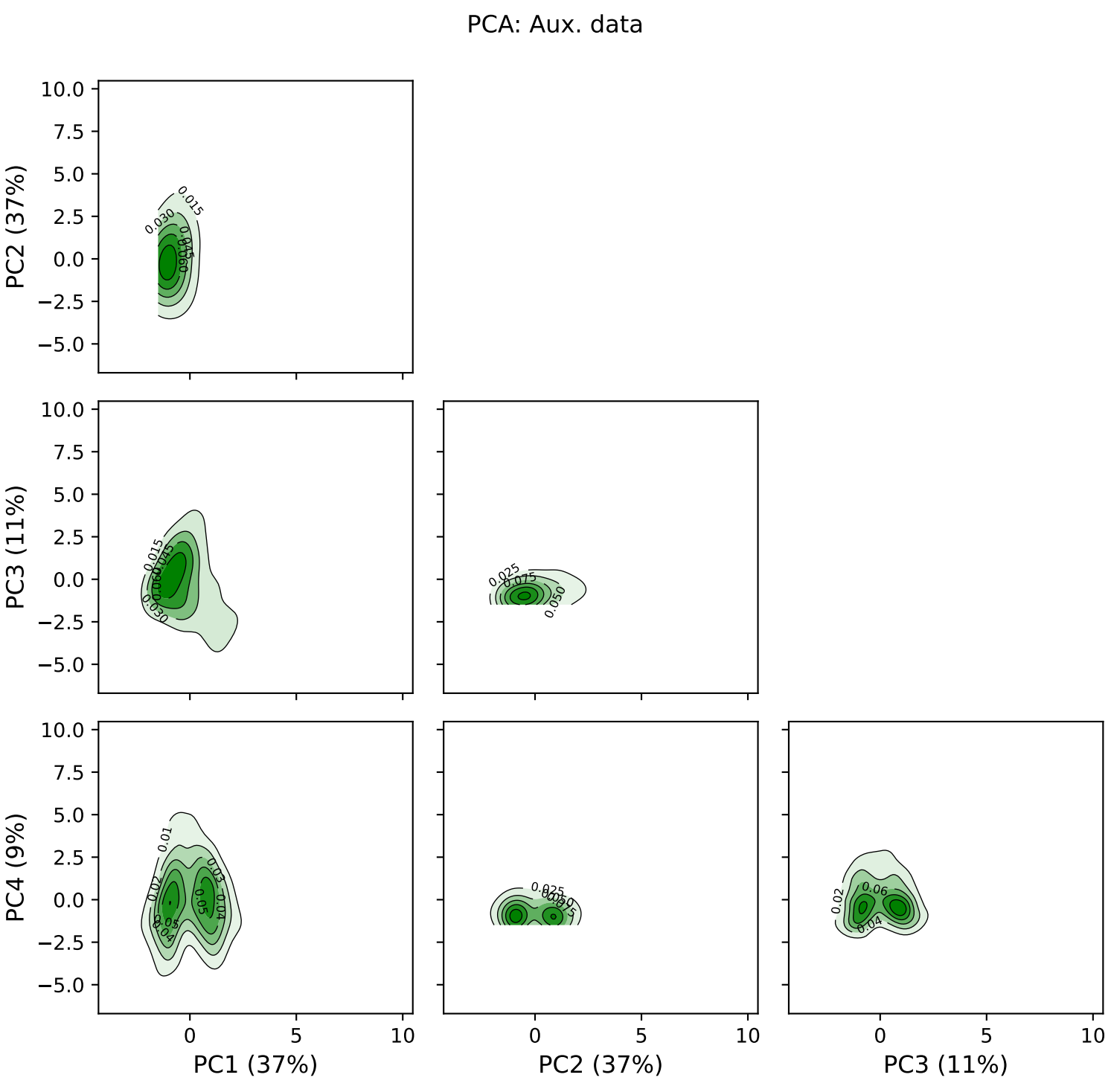
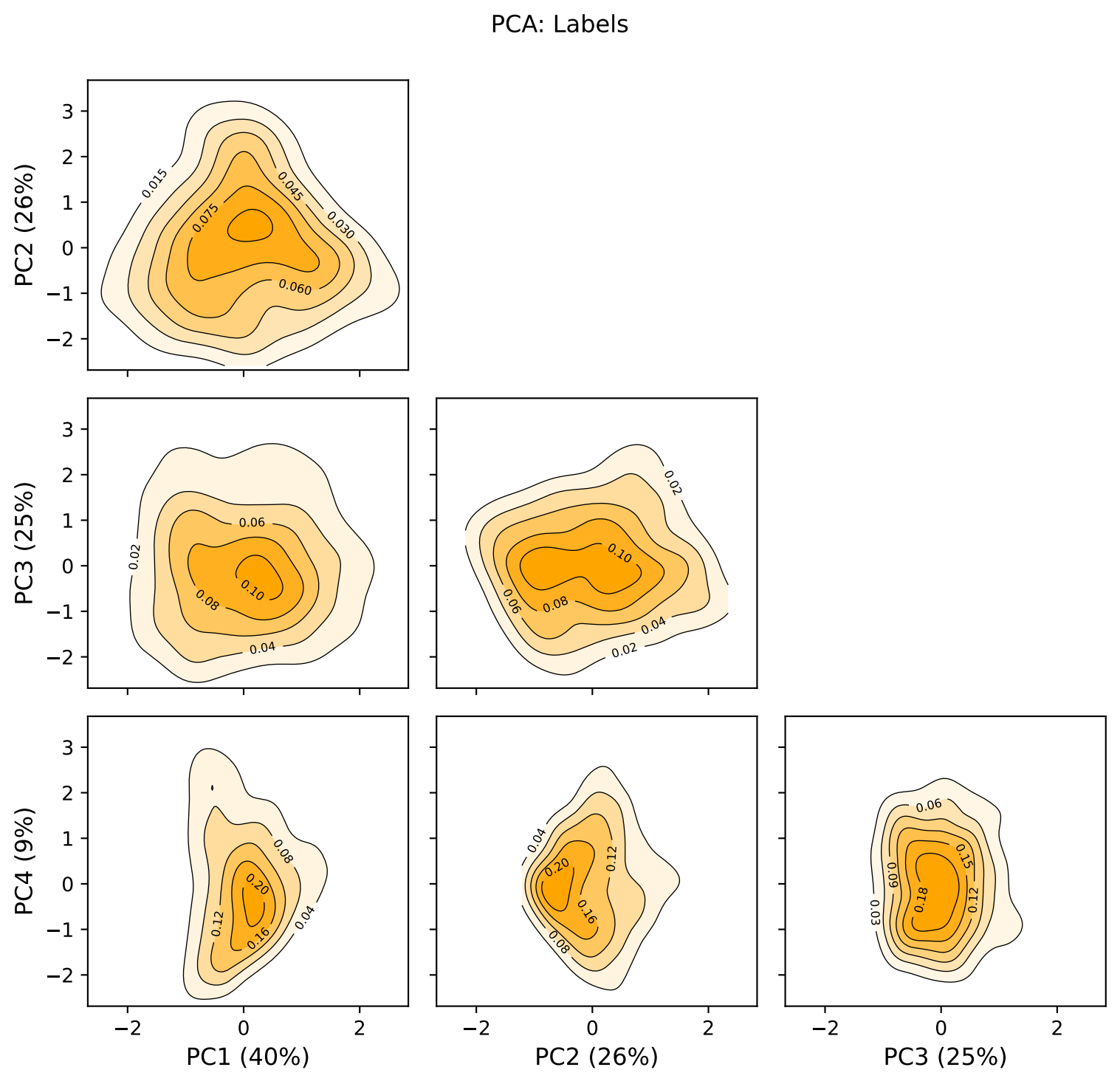
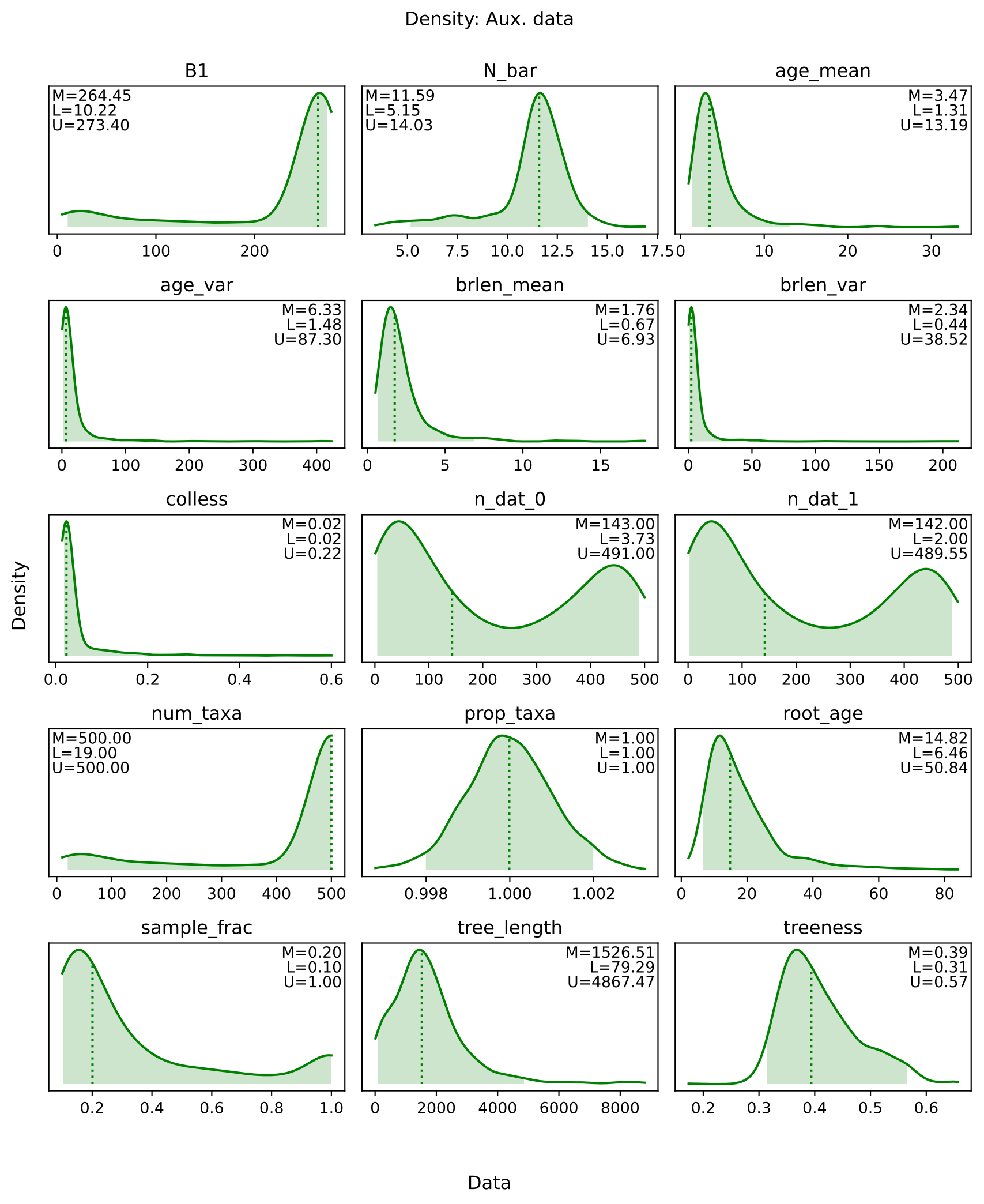
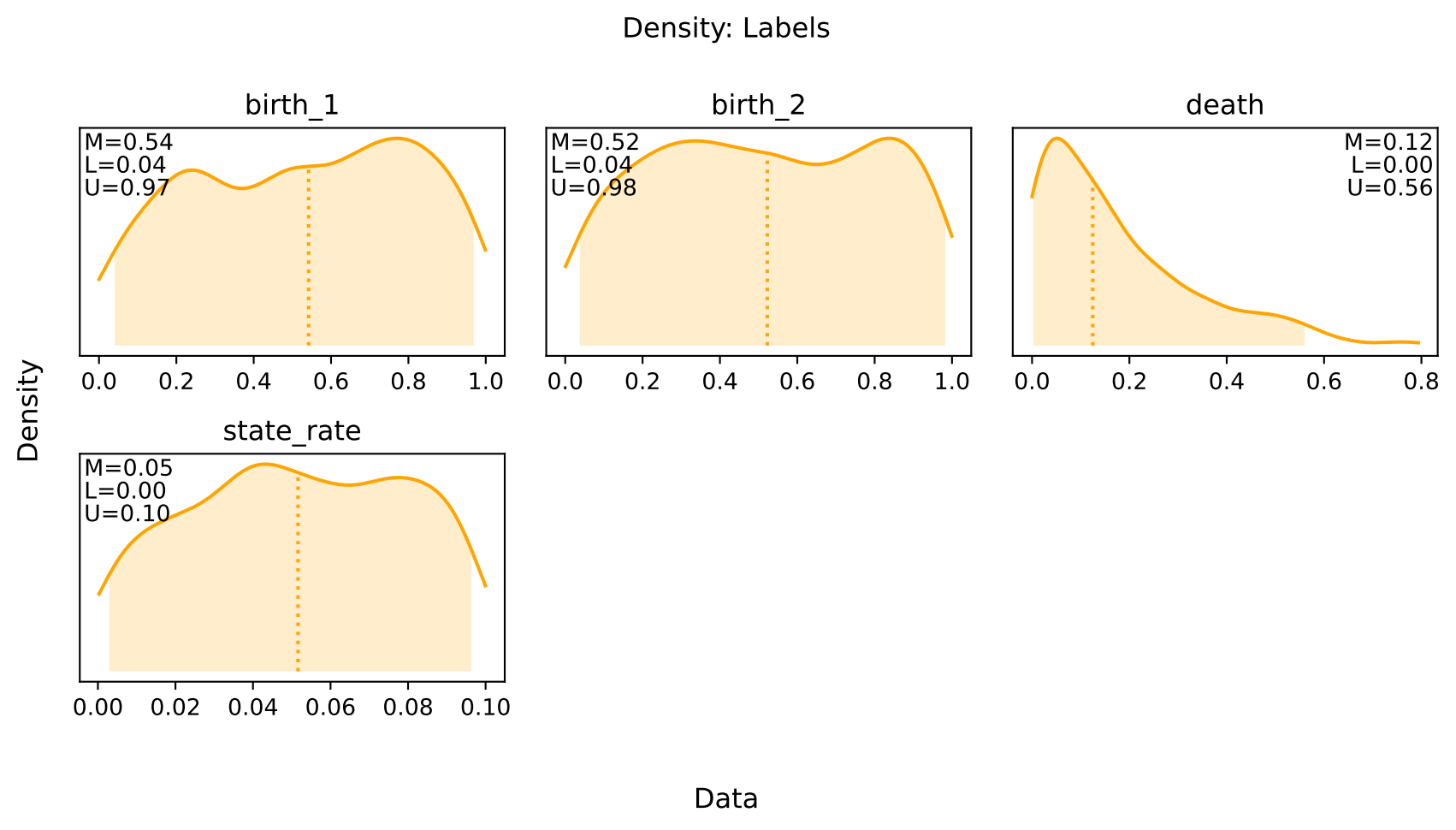
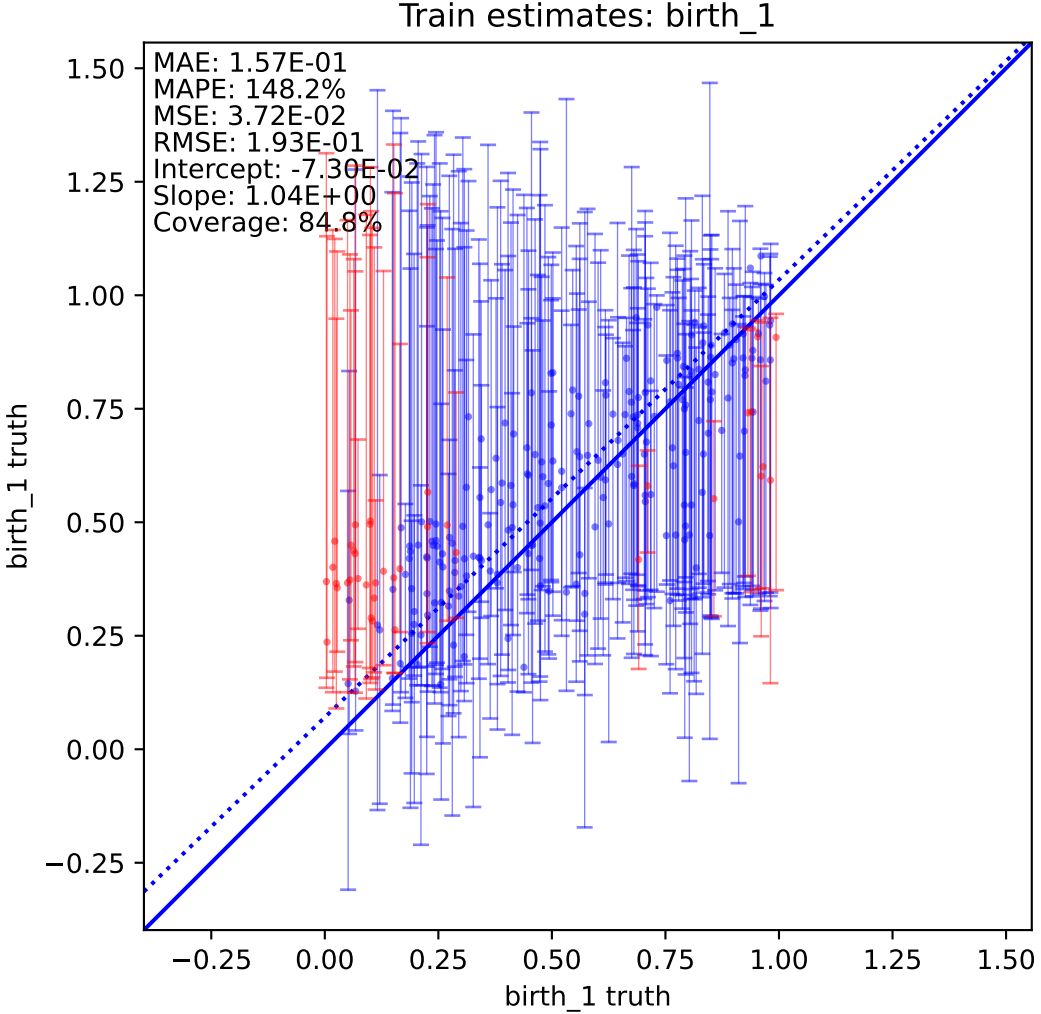
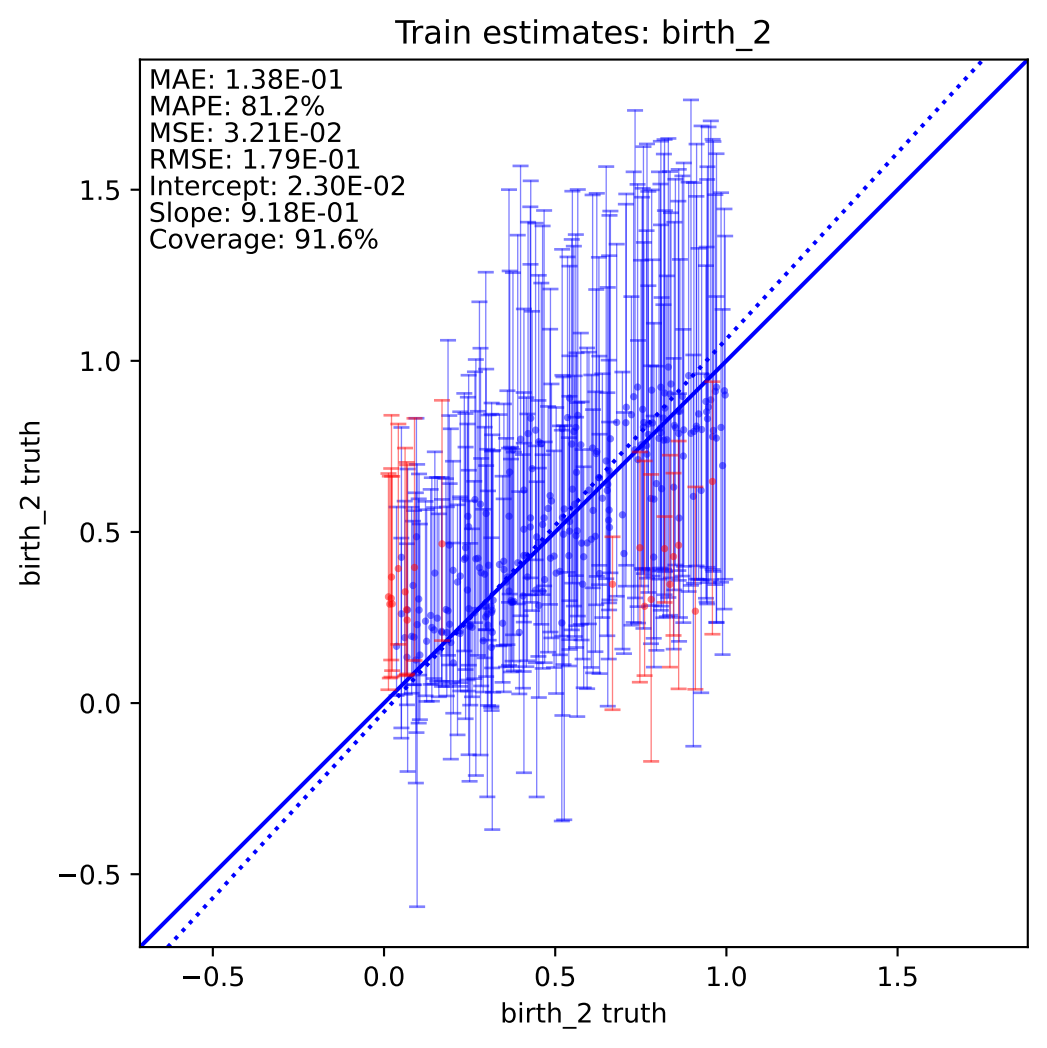

PCA: Aux. data
PC2 (37%)
PC3 (11%)
PC4 (9%)
PC1 (37%)
PC2 (37%)
PC3 (11%)

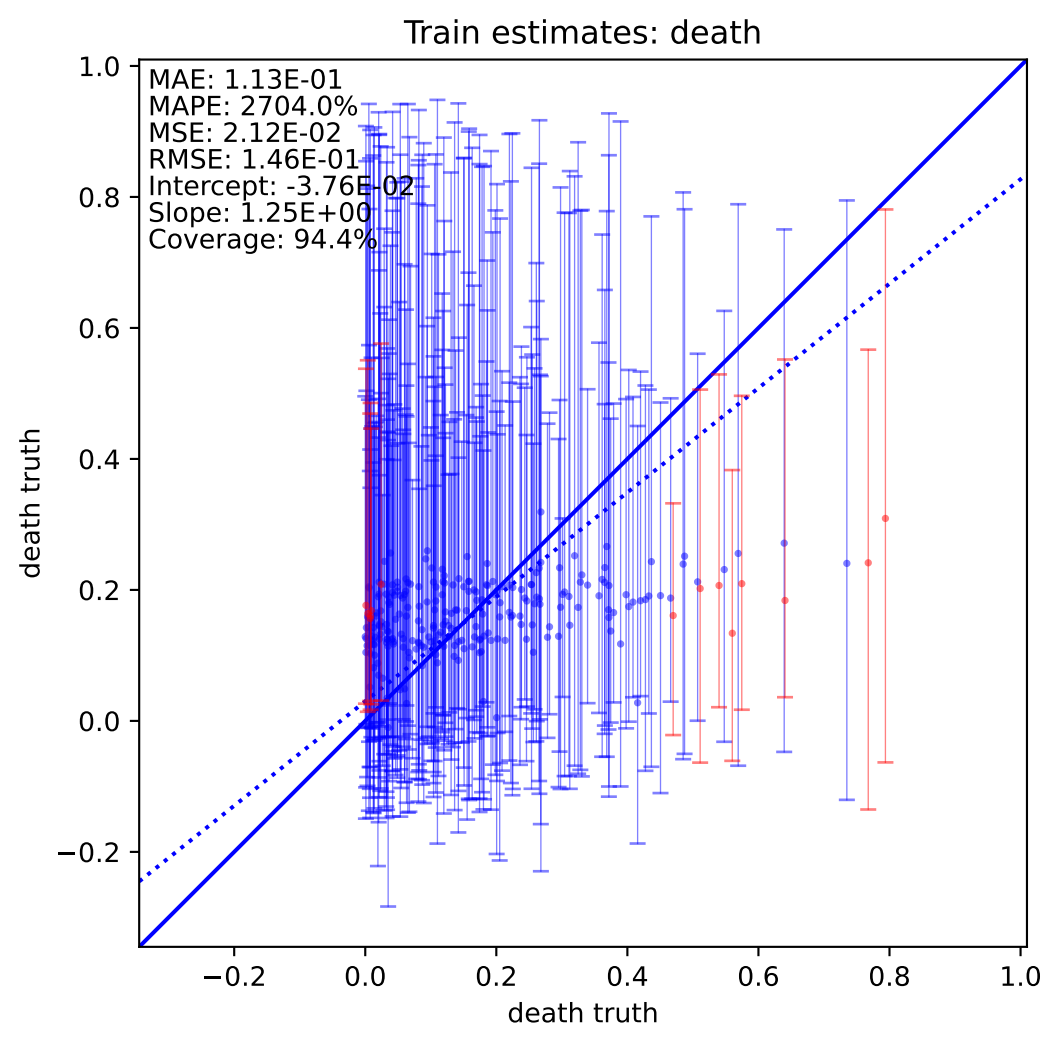

PCA: Labels
PC2 (26%)
PC3 (25%)
PC4 (9%)
PC1 (40%)
PC2 (26%)
PC3 (25%)

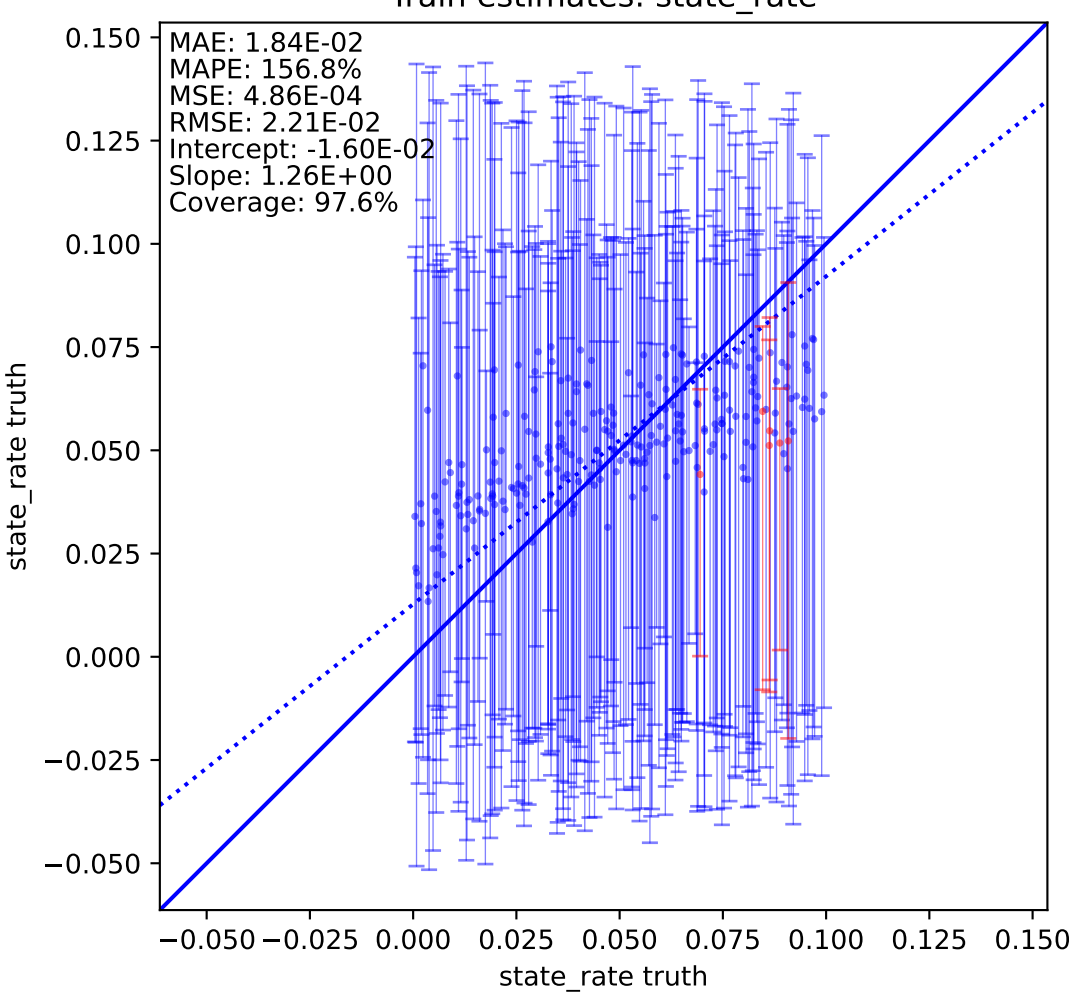

Density: Aux. data
B1
M=264.45
L=10.22
U=273.40
N_bar
M=11.59
L=5.15
U=14.03
age_mean
M=3.47
L=1.31
U=13.19
age_var
M=6.33
L=1.48
U=87.30
brlen_mean
M=1.76
L=0.67
U=6.93
brlen_var
M=2.34
L=0.44
U=38.52
colless
M=0.02
L=0.02
U=0.22
n_dat_0
M=143.00
L=3.73
U=491.00
n_dat_1
M=142.00
L=2.00
U=489.55
num_taxa
M=500.00
L=19.00
U=500.00
prop_taxa
M=1.00
L=1.00
U=1.00
root_age
M=14.82
L=6.46
U=50.84
sample_frac
M=0.20
L=0.10
U=1.00
tree_length
M=1526.51
L=79.29
U=4867.47
treeness
M=0.39
L=0.31
U=0.57
Density
Data

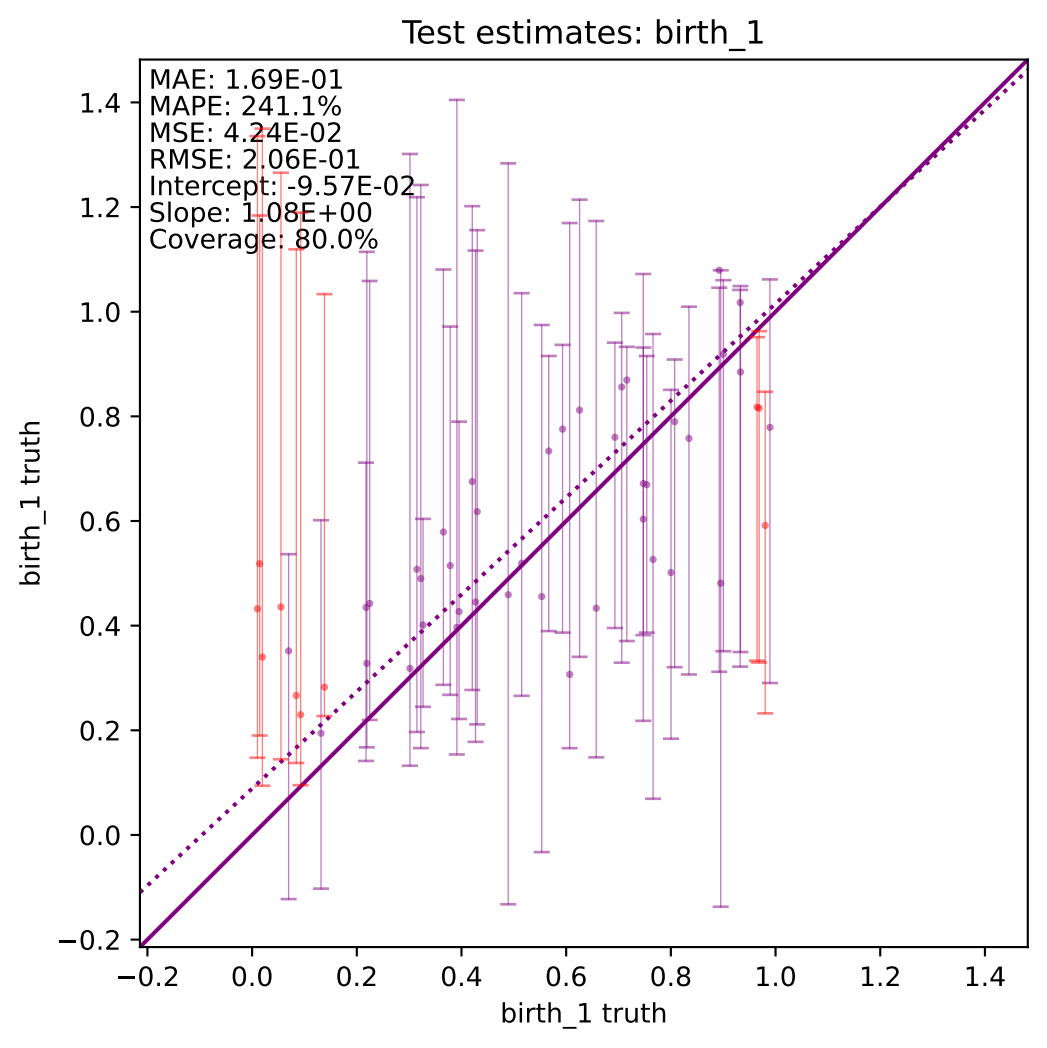

Density: Labels
birth_1
M=0.54
L=0.04
U=0.97
0.0
0.2
0.4
0.6
0.8
1.0
birth_2
M=0.52
L=0.04
U=0.98
0.0
0.2
0.4
0.6
0.8
1.0
death
M=0.12
L=0.00
U=0.56
0.0
0.2
0.4
0.6
0.8
state_rate
M=0.05
L=0.00
U=0.10
0.00
0.02
0.04
0.06
0.08
0.10
Density
Data

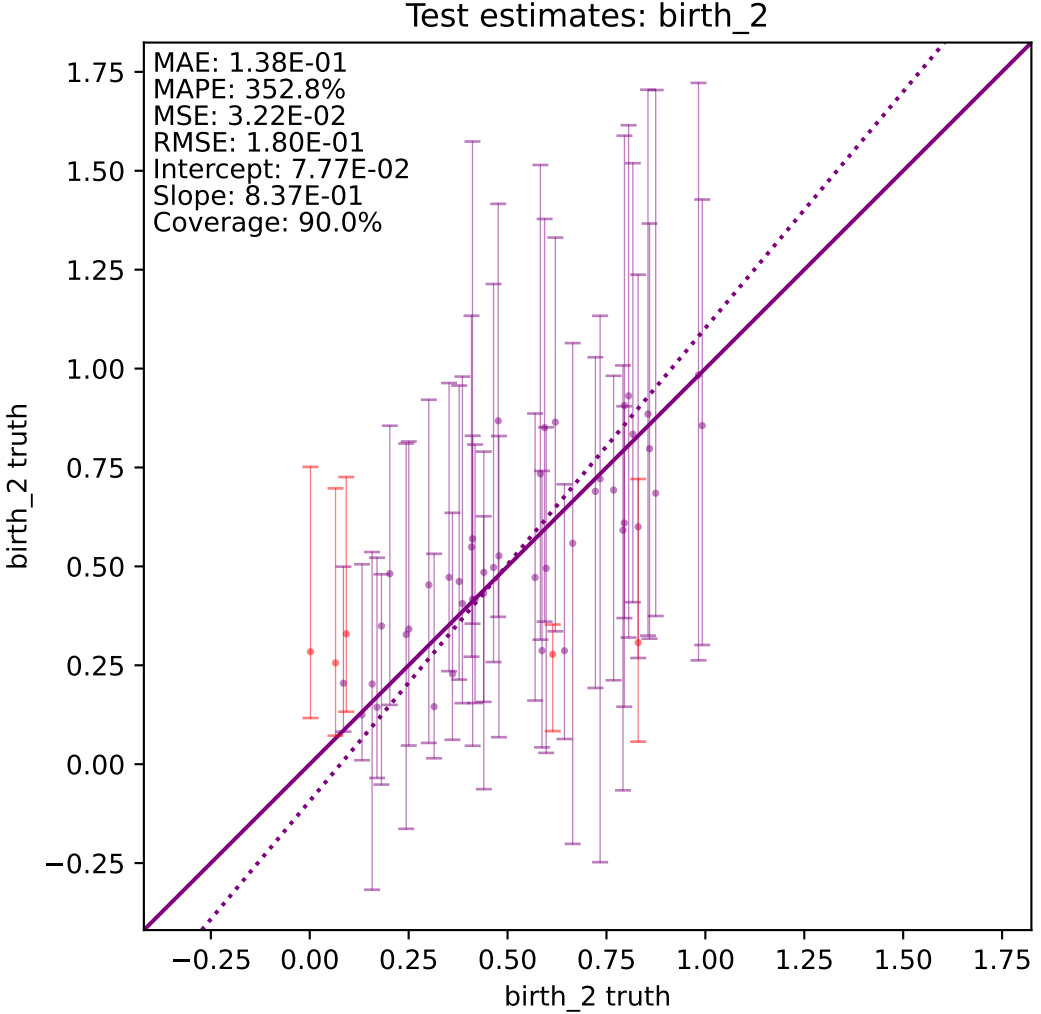

Train estimates: birth_1
MAE: 1.57E-01
MAPE: 148.2%
MSE: 3.72E-02
RMSE: 1.93E-01
Intercept: -7.30E-02
Slope: 1.04E+00
Coverage: 84.8%
birth_1 truth
birth_1 truth
1.50
1.25
1.00
0.75
0.50
0.25
0.00
−0.25
−0.25
0.00
0.25
0.50
0.75
1.00
1.25
1.50

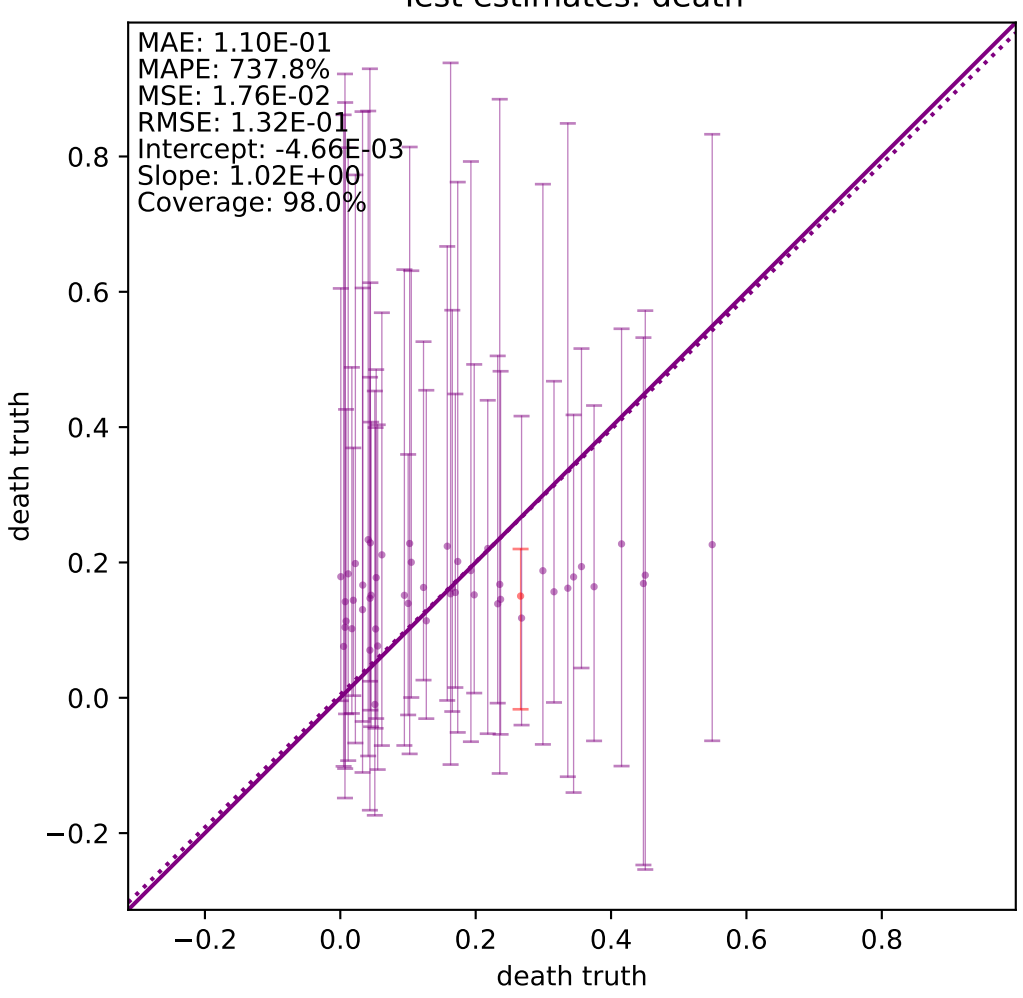

Train estimates: birth_2
MAE: 1.38E-01
MAPE: 81.2%
MSE: 3.21E-02
RMSE: 1.79E-01
Intercept: 2.30E-02
Slope: 9.18E-01
Coverage: 91.6%
birth_2 truth
birth_2 truth
1.5
1.0
0.5
0.0
−0.5
−0.5
0.0
0.5
1.0
1.5

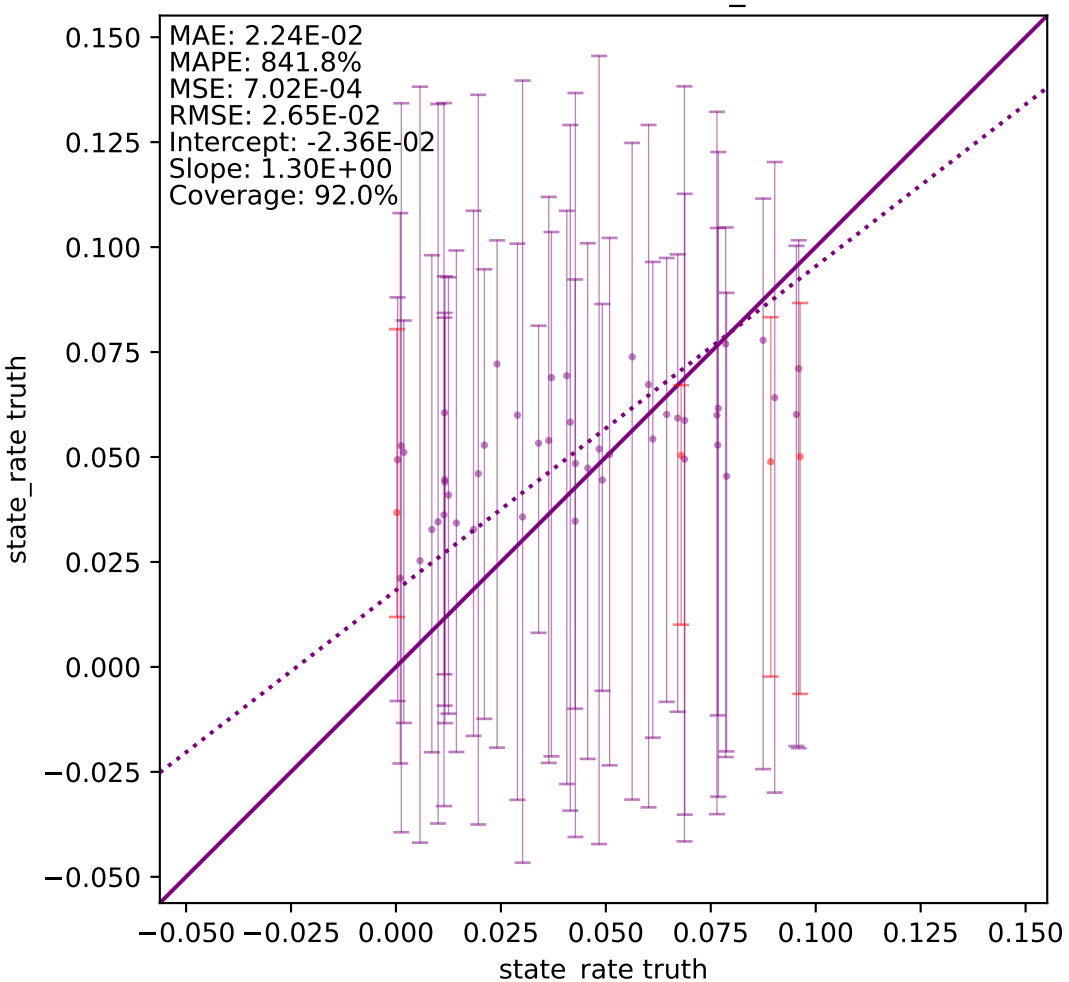

Train estimates: death
MAE: 1.13E-01
MAPE: 2704.0%
MSE: 2.12E-02
RMSE: 1.46E-01
Intercept: -3.76E-02
Slope: 1.25E+00
Coverage: 94.4%
death truth
death truth
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8
1.0

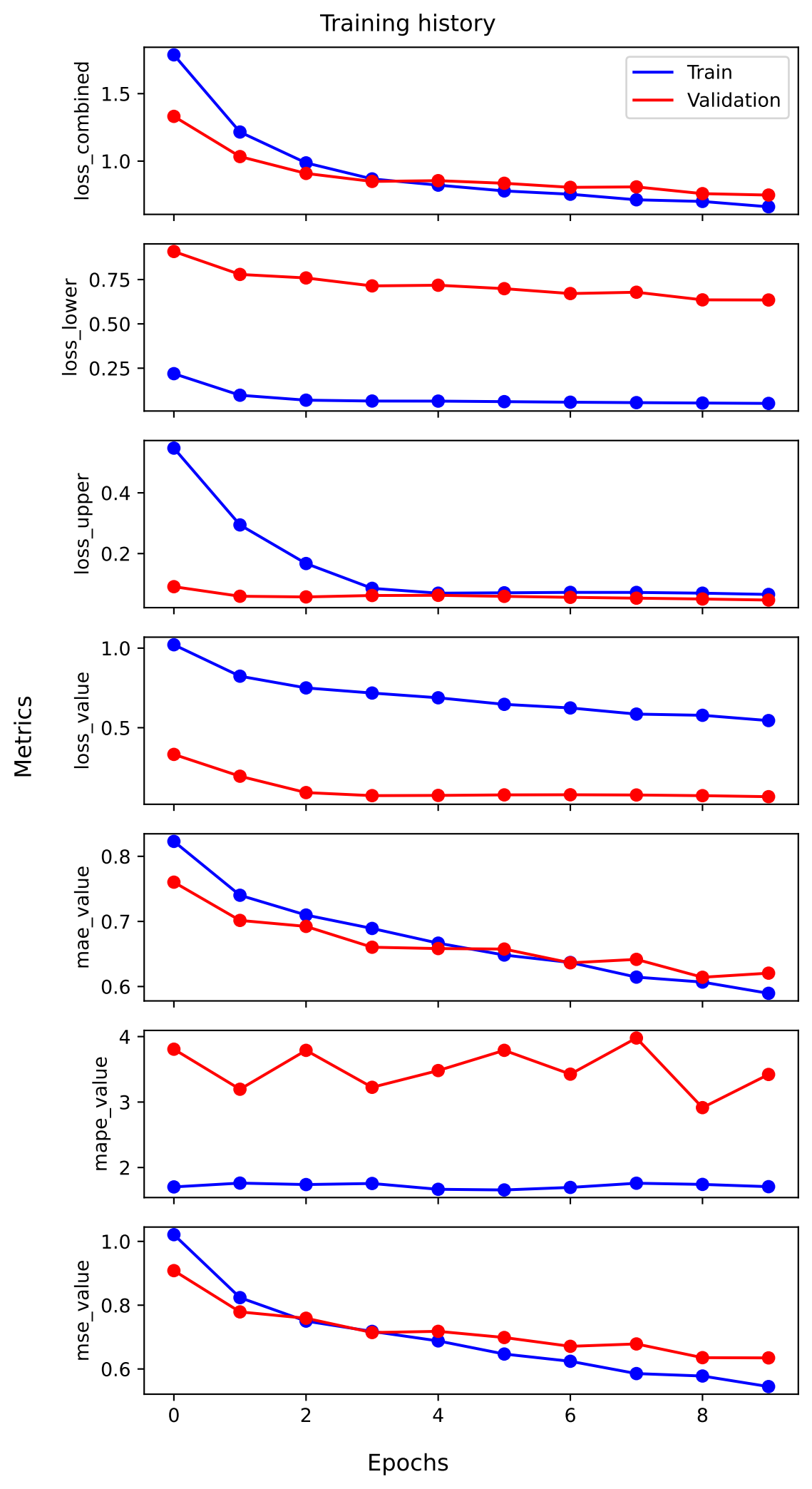

Train estimates: state_rate
MAE: 1.84E-02
MAPE: 156.8%
MSE: 4.86E-04
RMSE: 2.21E-02
Intercept: -1.60E-02
Slope: 1.26E+00
Coverage: 97.6%
state_rate truth
state_rate truth
0.150
0.125
0.100
0.075
0.050
0.025
0.000
−0.025
−0.050
−0.050
−0.025
0.000
0.025
0.050
0.075
0.100
0.125
0.150

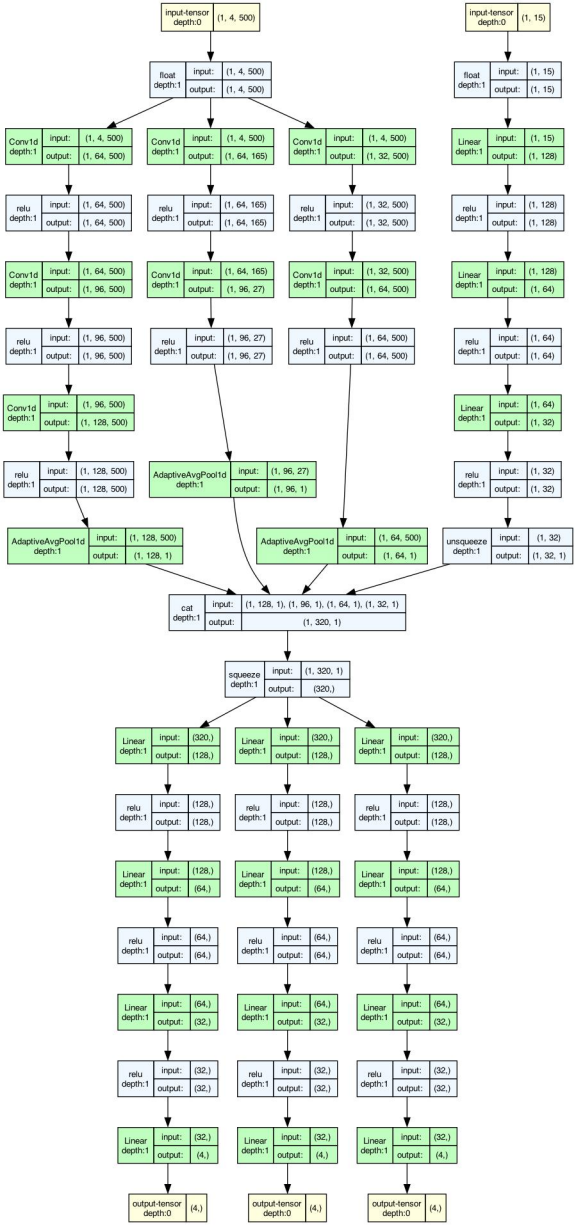

Test estimates: birth_1
MAE: 1.69E-01
MAPE: 241.1%
MSE: 4.24E-02
RMSE: 2.06E-01
Intercept: -9.57E-02
Slope: 1.08E+00
Coverage: 80.0%
birth_1 truth
birth_1 truth
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4


Test estimates: birth_2
MAE: 1.38E-01
MAPE: 352.8%
MSE: 3.22E-02
RMSE: 1.80E-01
Intercept: 7.77E-02
Slope: 8.37E-01
Coverage: 90.0%
birth_2 truth
birth_2 truth
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
−0.25
−0.25
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75


Test estimates: death
MAE: 1.10E-01
MAPE: 737.8%
MSE: 1.76E-02
RMSE: 1.32E-01
Intercept: -4.66E-03
Slope: 1.02E+00
Coverage: 98.0%
death truth
death truth
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8


Test estimates: state_rate
MAE: 2.24E-02
MAPE: 841.8%
MSE: 7.02E-04
RMSE: 2.65E-02
Intercept: -2.36E-02
Slope: 1.30E+00
Coverage: 92.0%
state_rate truth
state_rate truth
0.150
0.125
0.100
0.075
0.050
0.025
0.000
−0.025
−0.050
−0.050
−0.025
0.000
0.025
0.050
0.075
0.100
0.125
0.150


Training history
Train
Validation
loss_combined
loss_lower
loss_upper
loss_value
mae_value
mape_value
mse_value
Metrics
Epochs


input-tensor depth:0 (1, 4, 500)
input-tensor depth:0 (1, 15)
float depth:1 input: (1, 4, 500) output: (1, 4, 500)
float depth:1 input: (1, 15) output: (1, 15)
Conv1d depth:1 input: (1, 4, 500) output: (1, 64, 500)
Conv1d depth:1 input: (1, 4, 500) output: (1, 64, 165)
Conv1d depth:1 input: (1, 4, 500) output: (1, 32, 500)
Linear depth:1 input: (1, 15) output: (1, 128)
relu depth:1 input: (1, 64, 500) output: (1, 64, 500)
relu depth:1 input: (1, 64, 165) output: (1, 64, 165)
relu depth:1 input: (1, 32, 500) output: (1, 32, 500)
relu depth:1 input: (1, 128) output: (1, 128)
Conv1d depth:1 input: (1, 64, 500) output: (1, 96, 500)
Conv1d depth:1 input: (1, 64, 165) output: (1, 96, 27)
Conv1d depth:1 input: (1, 32, 500) output: (1, 64, 500)
Linear depth:1 input: (1, 128) output: (1, 64)
relu depth:1 input: (1, 96, 500) output: (1, 96, 500)
relu depth:1 input: (1, 96, 27) output: (1, 96, 27)
relu depth:1 input: (1, 64, 500) output: (1, 64, 500)
relu depth:1 input: (1, 64) output: (1, 64)
Conv1d depth:1 input: (1, 96, 500) output: (1, 128, 500)
Linear depth:1 input: (1, 64) output: (1, 32)
relu depth:1 input: (1, 128, 500) output: (1, 128, 500)
AdaptiveAvgPool1d depth:1 input: (1, 96, 27) output: (1, 96, 1)
relu depth:1 input: (1, 32) output: (1, 32)
AdaptiveAvgPool1d depth:1 input: (1, 128, 500) output: (1, 128, 1)
AdaptiveAvgPool1d depth:1 input: (1, 64, 500) output: (1, 64, 1)
unsqueeze depth:1 input: (1, 32) output: (1, 32, 1)
cat depth:1 input: (1, 128, 1), (1, 96, 1), (1, 64, 1), (1, 32, 1) output: (1, 320, 1)
squeeze depth:1 input: (1, 320, 1) output: (320,)
Linear depth:1 input: (320,) output: (128,)
Linear depth:1 input: (320,) output: (128,)
Linear depth:1 input: (320,) output: (128,)
relu depth:1 input: (128,) output: (128,)
relu depth:1 input: (128,) output: (128,)
relu depth:1 input: (128,) output: (128,)
Linear depth:1 input: (128,) output: (64,)
Linear depth:1 input: (128,) output: (64,)
Linear depth:1 input: (128,) output: (64,)
relu depth:1 input: (64,) output: (64,)
relu depth:1 input: (64,) output: (64,)
relu depth:1 input: (64,) output: (64,)
Linear depth:1 input: (64,) output: (32,)
Linear depth:1 input: (64,) output: (32,)
Linear depth:1 input: (64,) output: (32,)
relu depth:1 input: (32,) output: (32,)
relu depth:1 input: (32,) output: (32,)
relu depth:1 input: (32,) output: (32,)
Linear depth:1 input: (32,) output: (4,)
Linear depth:1 input: (32,) output: (4,)
Linear depth:1 input: (32,) output: (4,)
output-tensor depth:0 (4,)
output-tensor depth:0 (4,)
output-tensor depth:0 (4,)