analyze_simulation_study_results

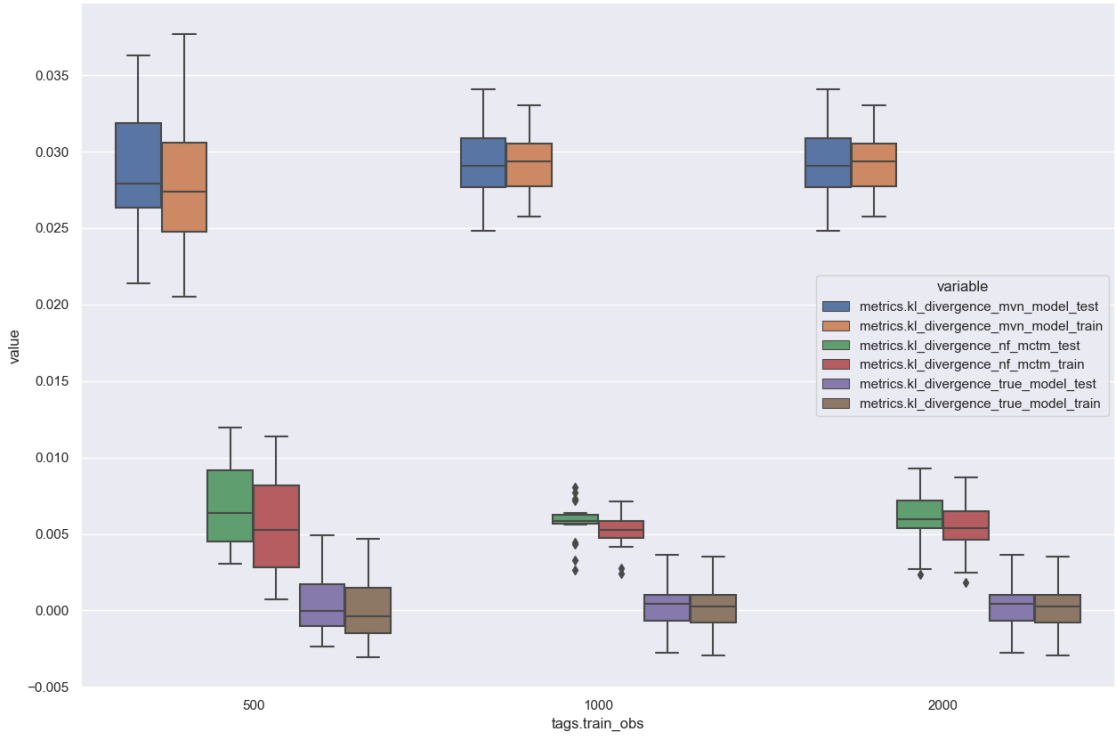
February 21, 2023

1 KL Divergence to the True Model across Train/Test Set for Models and Observations

T-Copula

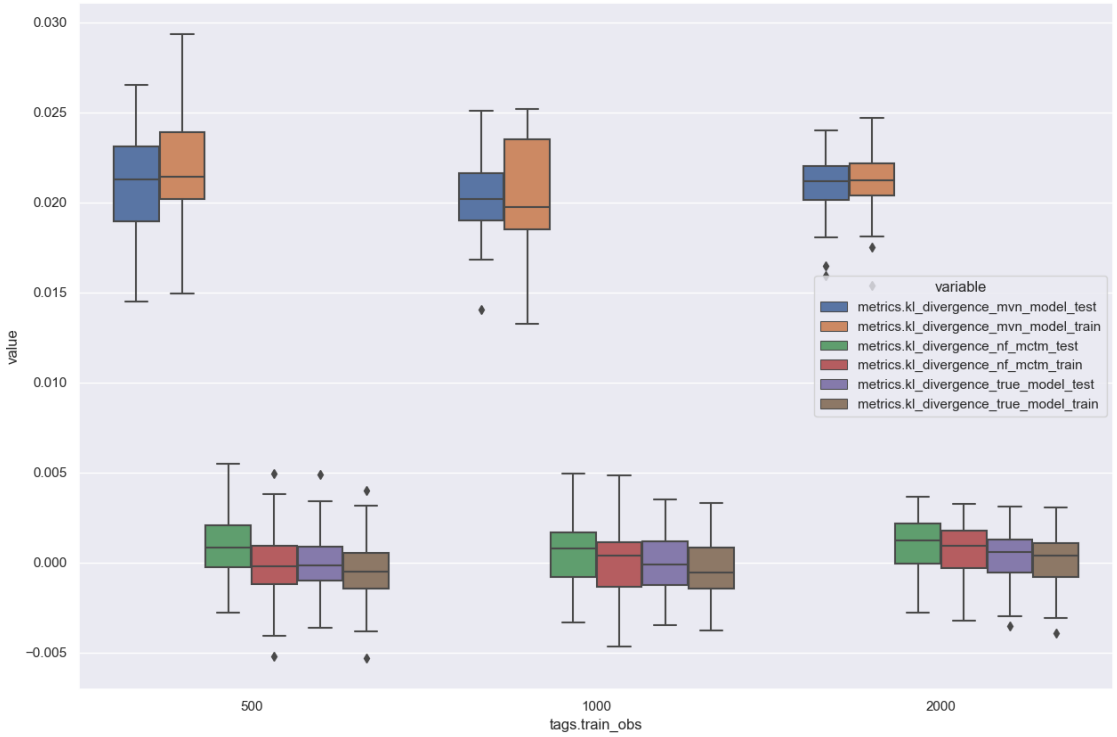
- clear improvement compared to multivariate gaussian model

- does not seem to converge to the true model



Joe-Copula

- almost as good as the true model
- converges to the true model in terms of estimation variance



Frank-Copula

- almost as good as the true model
- converges to the true model in terms of estimation variance and mean

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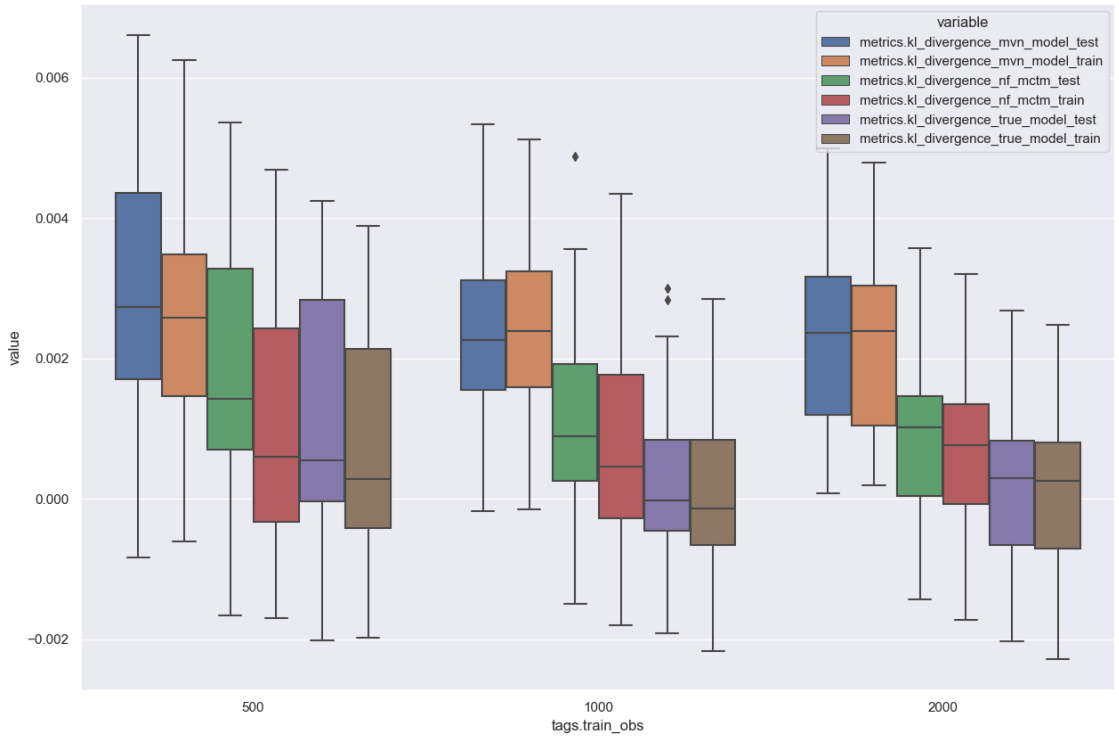
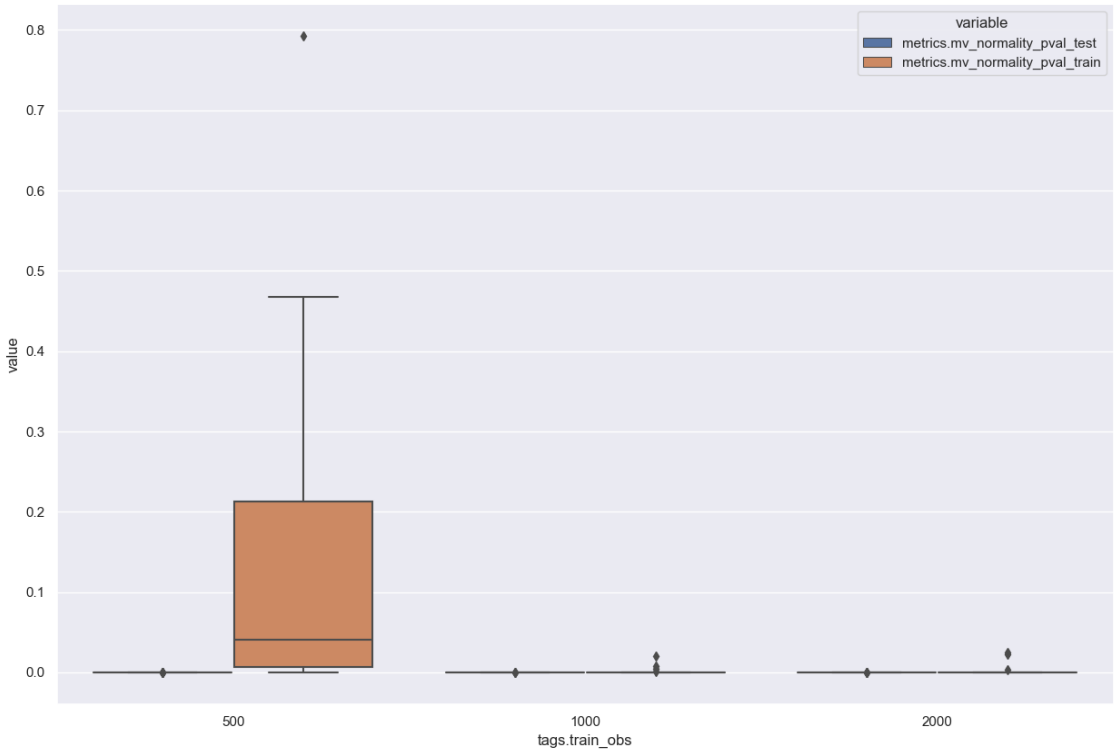
- for small sample sizes multivariate gaussian is similar



2 P-Value of Normality Test in the Latent Space

T-Copula

- only in the training set at merely 500 observations the model managed to get multivariate normality in the latent space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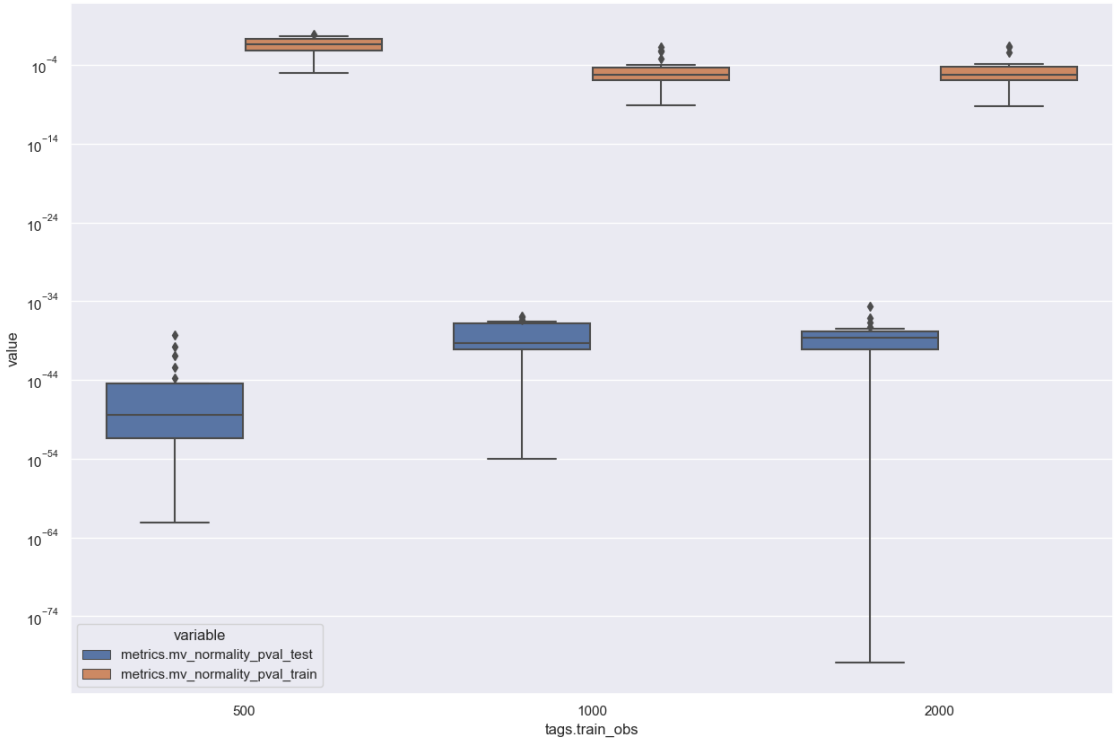
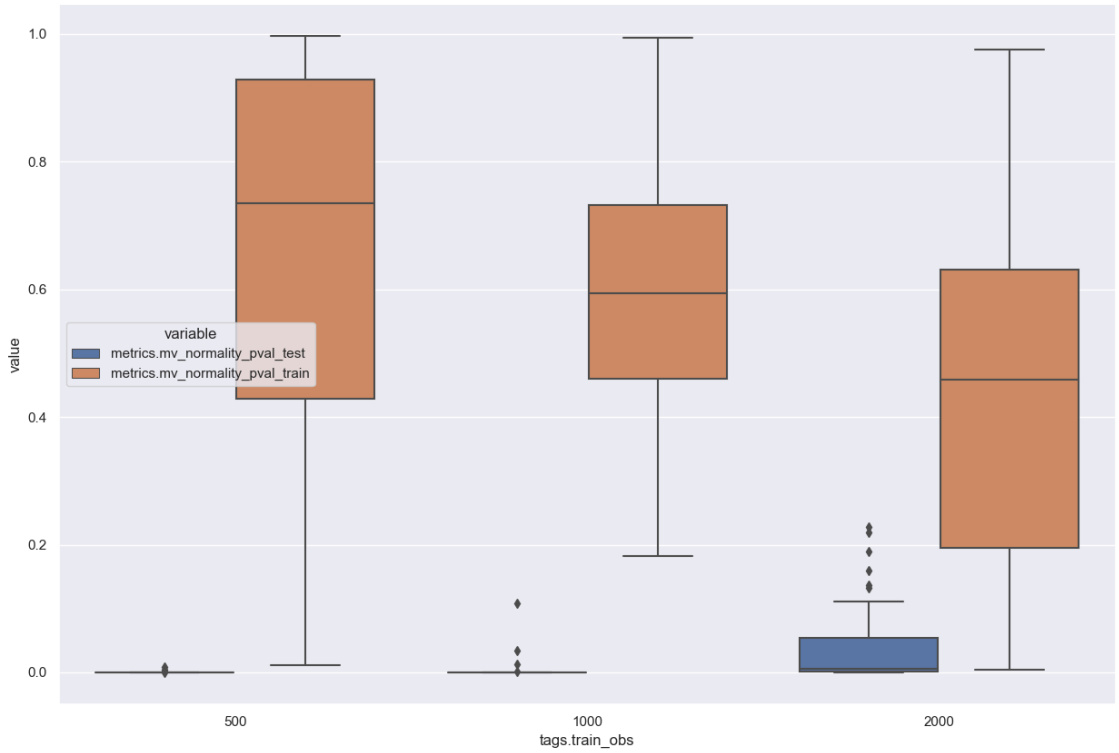
metrics.mv_normality_pval_test
metrics.mv_normality_pval_train
value
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
500
1000
2000
tags.train_obs


value
10^{-4}
10^{-14}
10^{-24}
10^{-34}
10^{-44}
10^{-54}
10^{-64}
10^{-74}
variable
metrics.mv_normality_pval_test
metrics.mv_normality_pval_train
500
1000
2000
tags.train_obs

Joe-Copula

- works well in the training set
- works better in test set for larger training sets

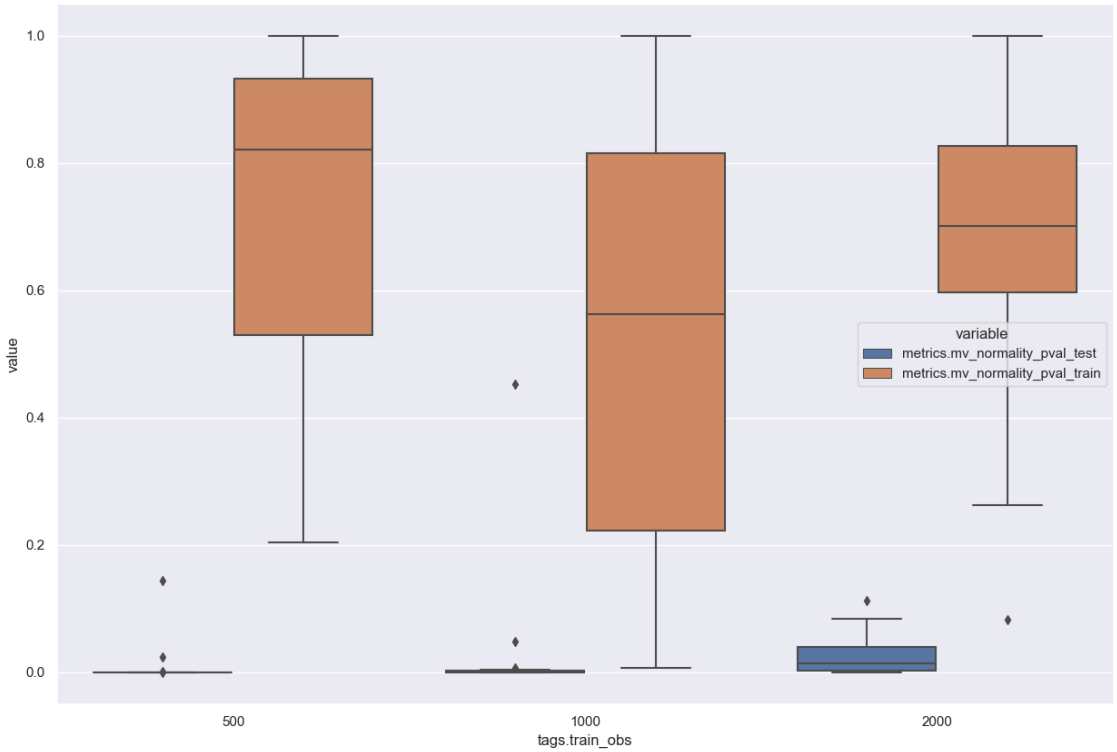
- fit quality deteriorates with increased sample



Frank-Copula

- good fit in training
- remains stable over observation sizes

- only positive results in the test set for large samples


1.0
0.8
0.6
0.4
0.2
0.0
value
500
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tags.train_obs
variable
metrics.mv_normality_pval_test
metrics.mv_normality_pval_train