where are we…

updates using pompjax, and the empirical prevalences from the literature.

ABM inferences

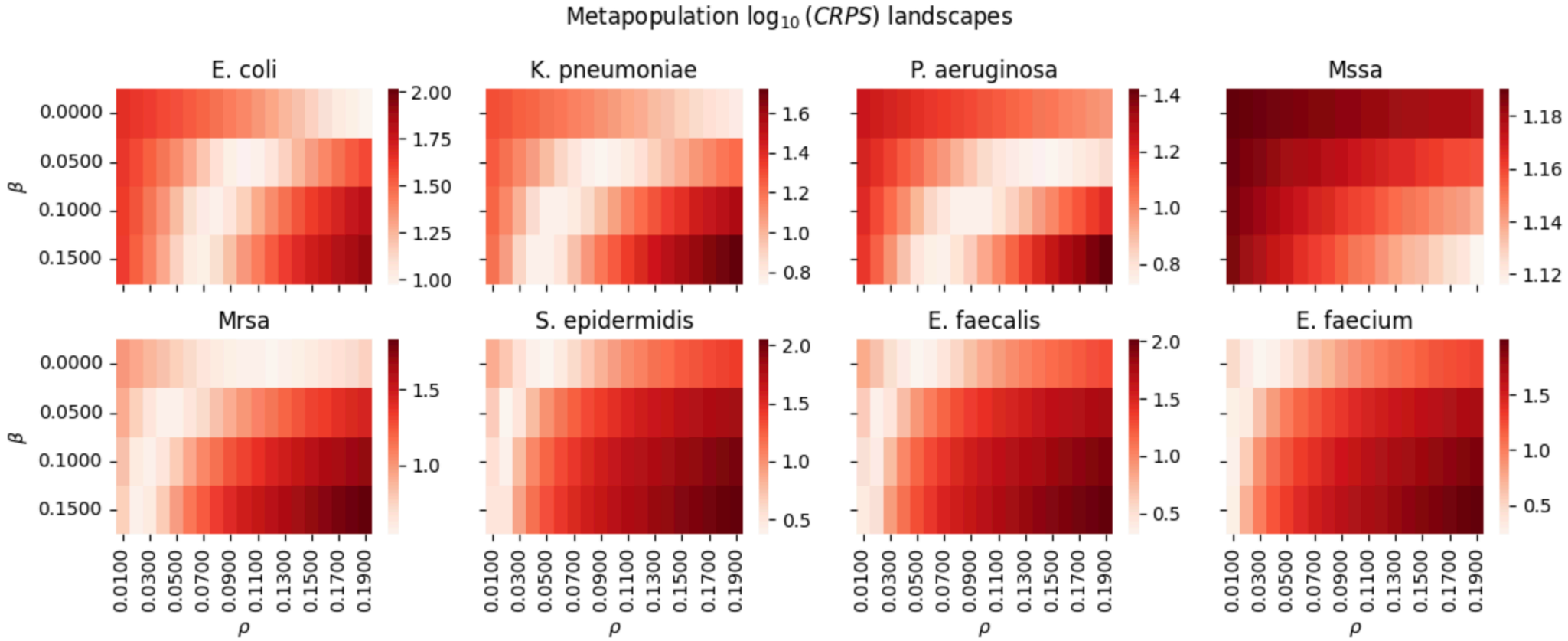
recap

- Process model at daily time scales.
- Same study period as before 01/Feb/2020 to 28/Feb/2021 (weird drop in culture after feb 2021)
- we decided to drop *C. albicans* and include *E. faecalis,* also in the top 15 of microorganism detected.

ABM inferences

Inference on synthetic data.

- as the definition of ρ is a little blurry and hard to find references I did some grid search and computed the fit to the hospital level data to ballpark the range for the different importation rates (AMRO prevalences).



ABM inferences

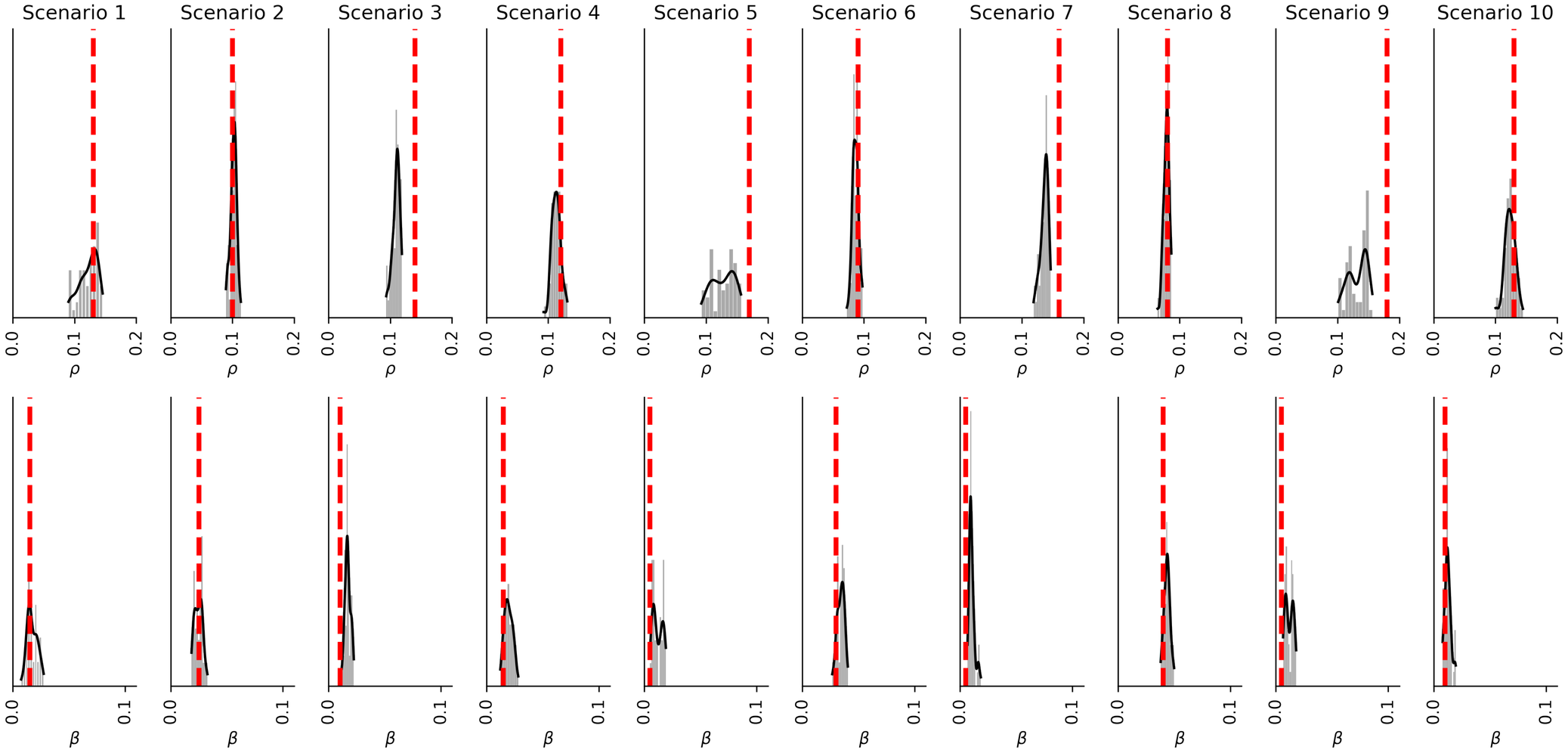
Inference on synthetic data.

- Using the ranges in the grid search, I selected values that already minimize the CRPS to the hospital-level observations and ran inferences on that.
    - I checked the convergence plots and the inferences seem to be working/converging.
- The empirical prevalences range from 0.4% (MRSA), to 60.3% (E. coli), so in general, we are covering a huge range of importations from all the AMRO to test in synthetic inferences.
    - Only MRSA and *P. aeruginosa* have importations lower than 15%
- **Results:** in general it seems that the inference is working very well (truths are falling in the posterior - even shrinking the variance). However, for low importation rates (lower than 15%) the system struggles in both β and ρ.
    - Next slides shows the posterior for the 10 scenarios for all the AMROs. Prior ranges for the inference are shown as the limit of the x-axis.
- **Next:** If we want to report CI maybe I could remove the shrinking between iterations and see how those posterior look like.

ABM inferences on synthetic data

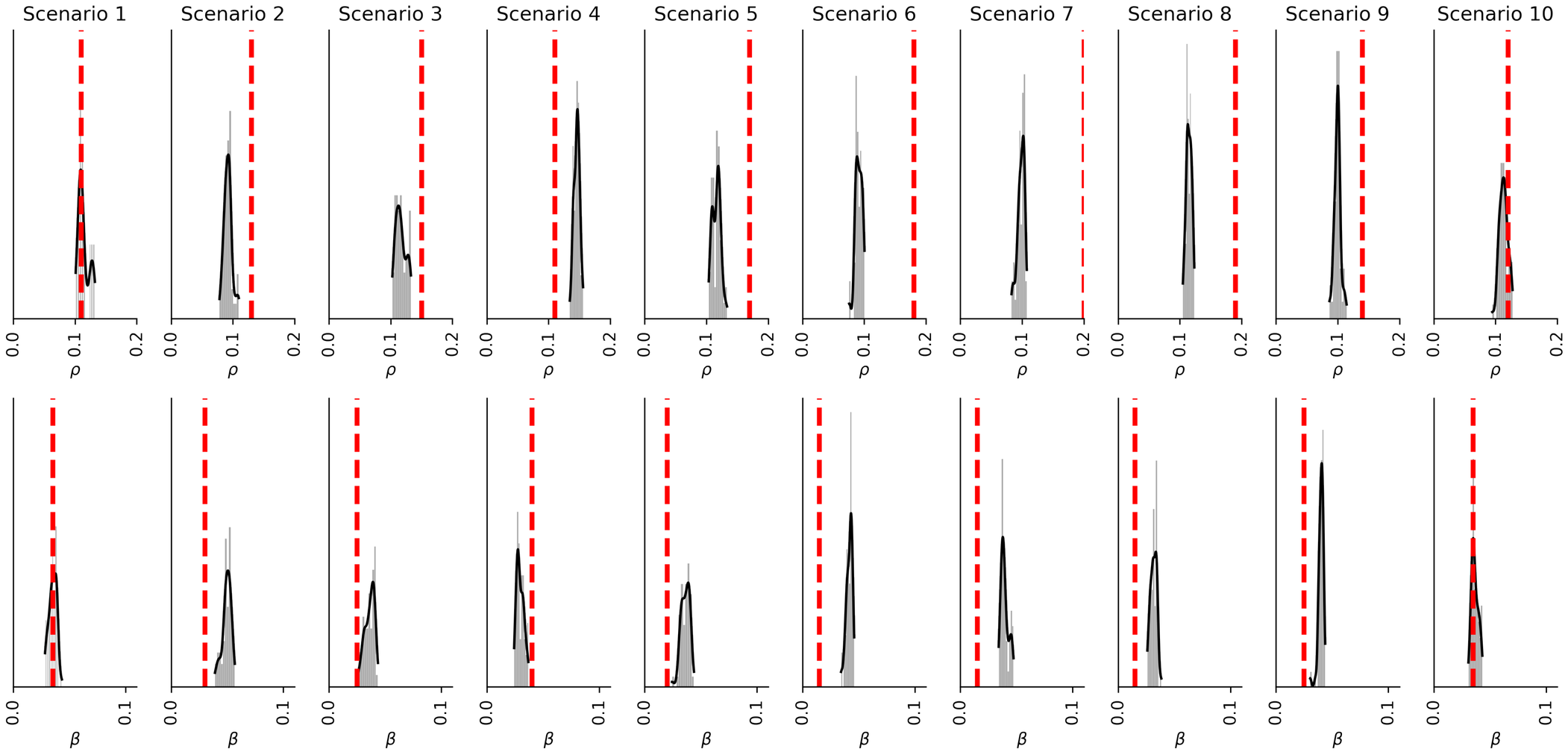
Inferences on simulated observations

Two observational models;



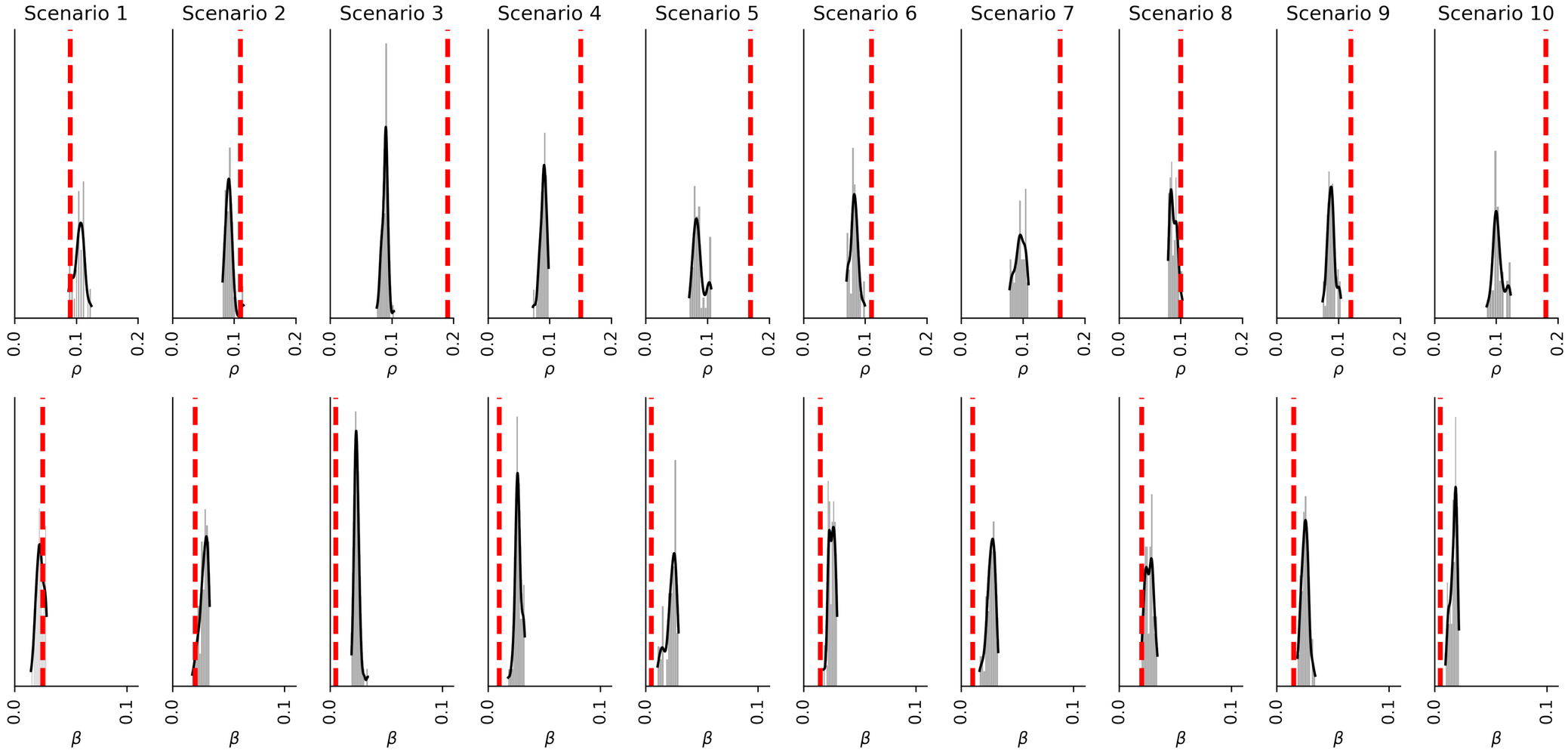
Inferences on simulated observations

Two observational models;



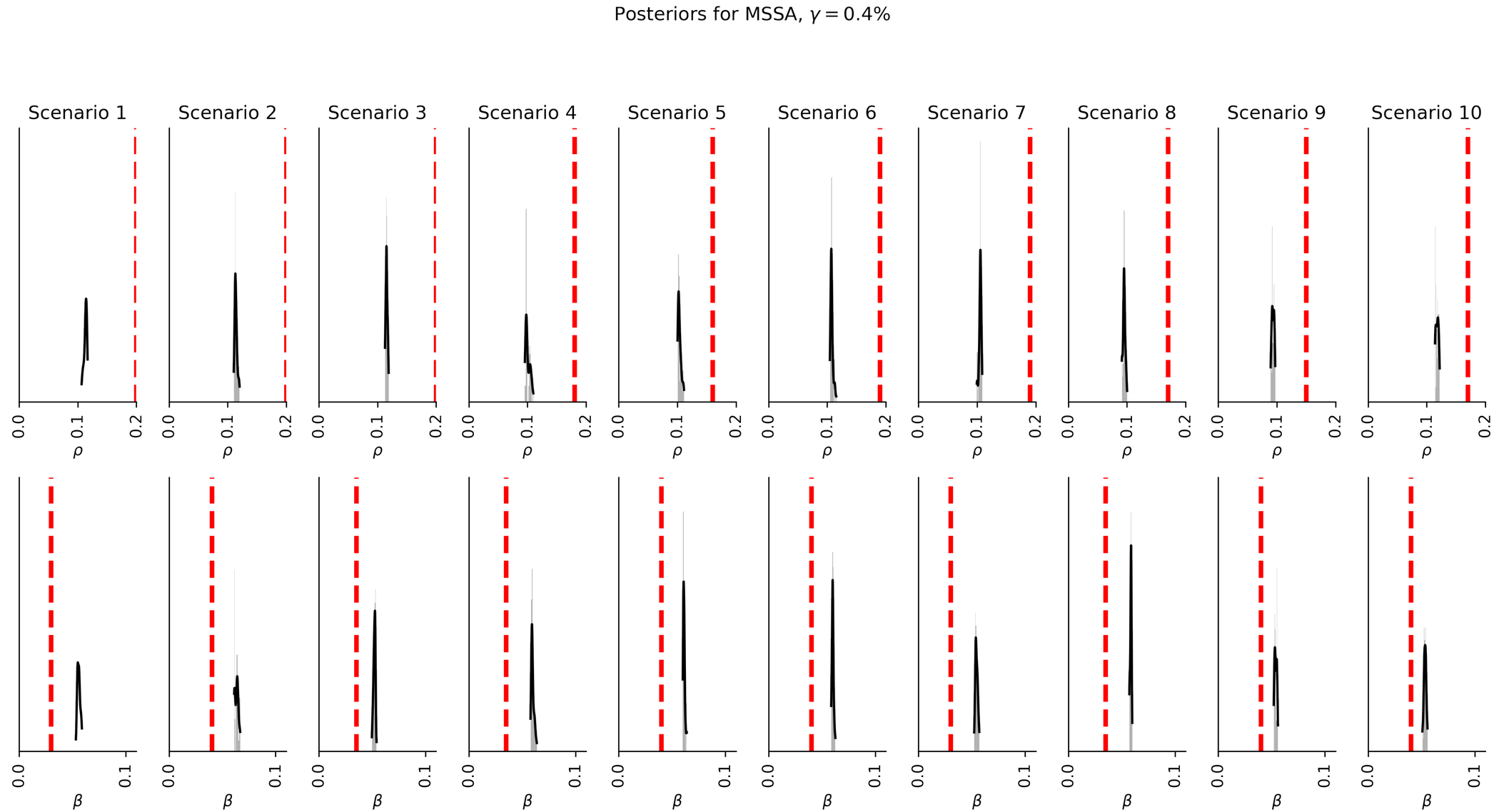
Inferences on simulated observations

Two observational models;



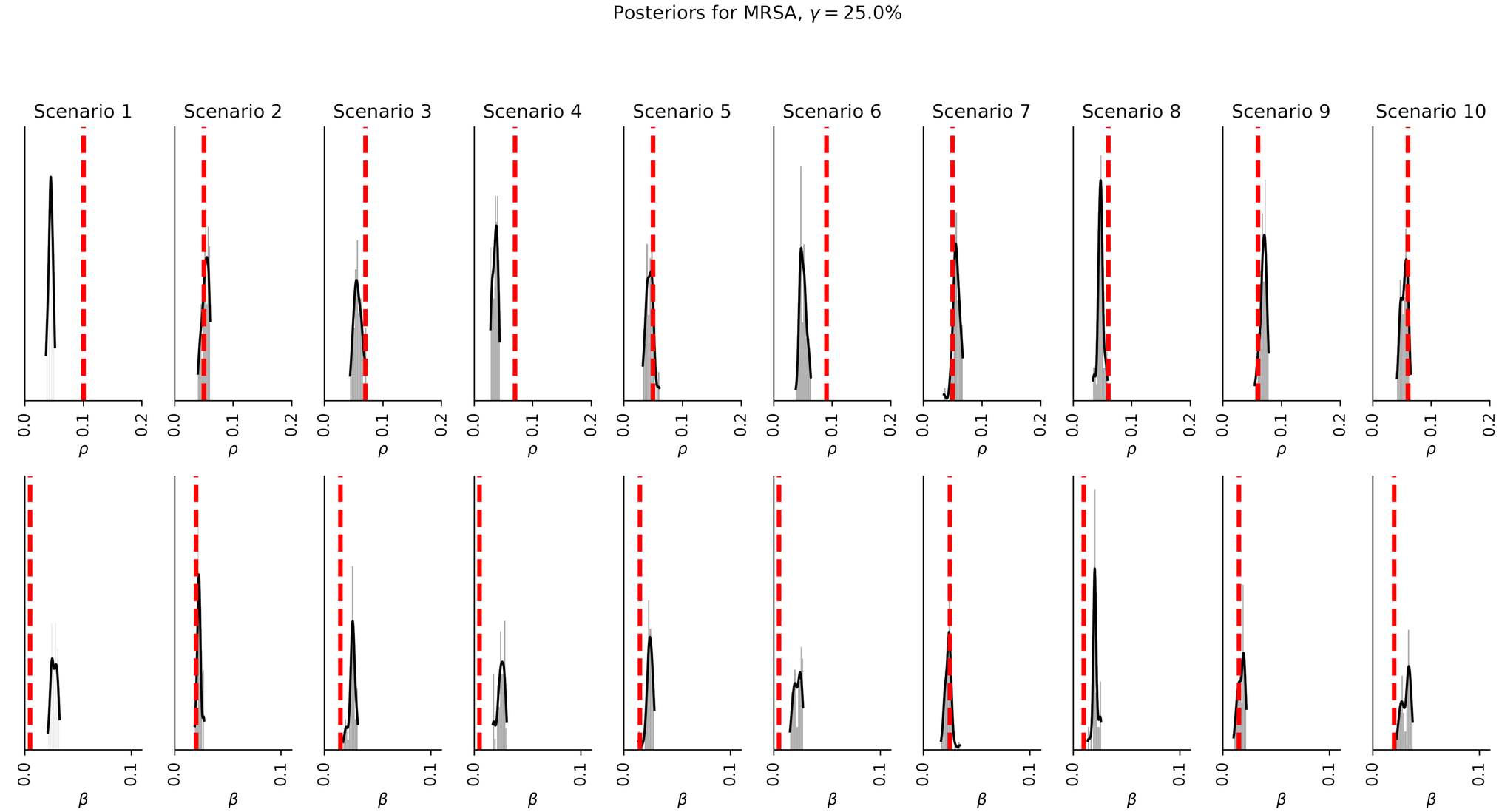
Inferences on simulated observations

Two observational models;



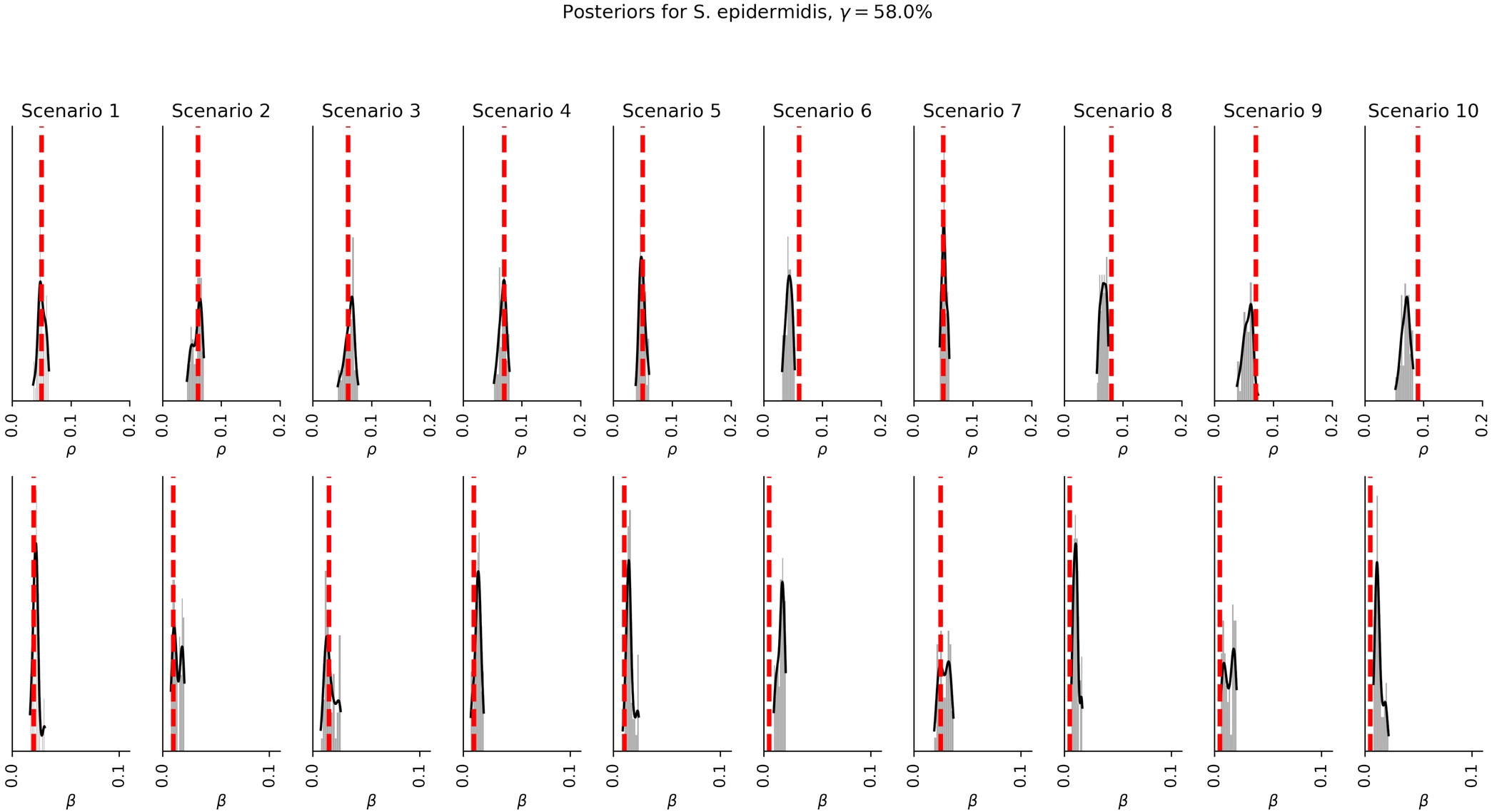
Inferences on simulated observations

Two observational models;



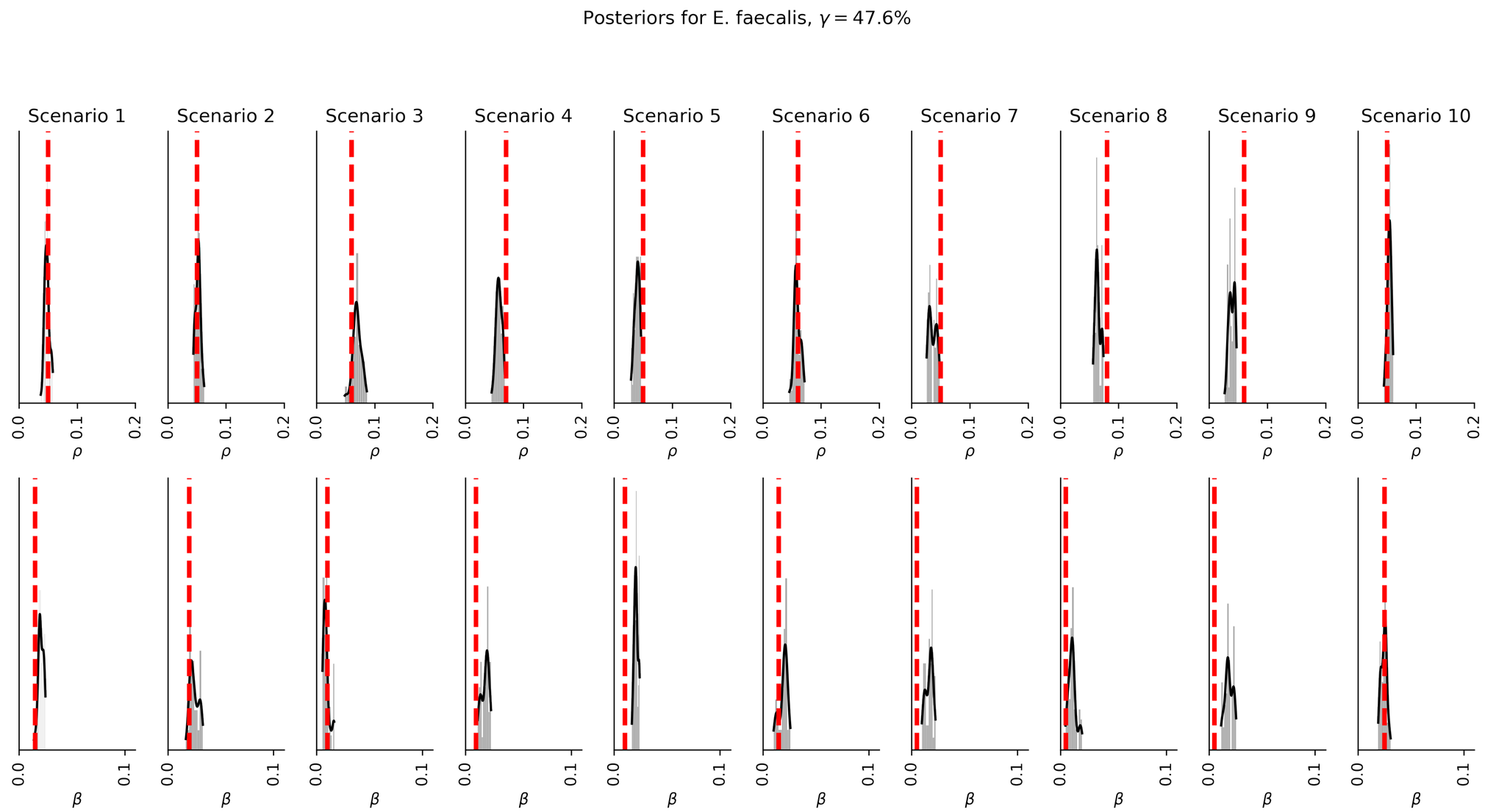
Inferences on simulated observations

Two observational models;



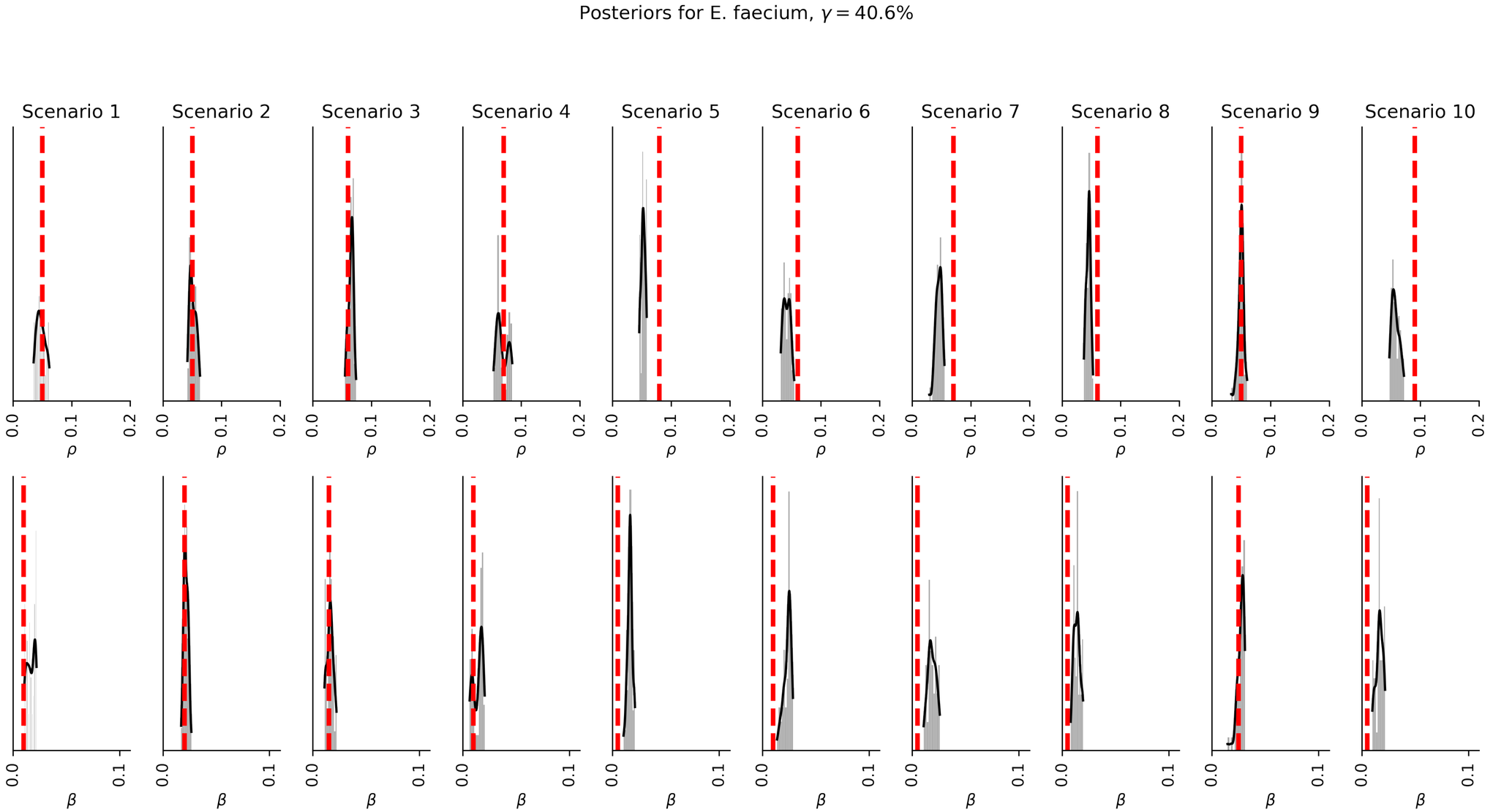
Inferences on simulated observations

Two observational models;



Inferences on simulated observations

Two observational models;

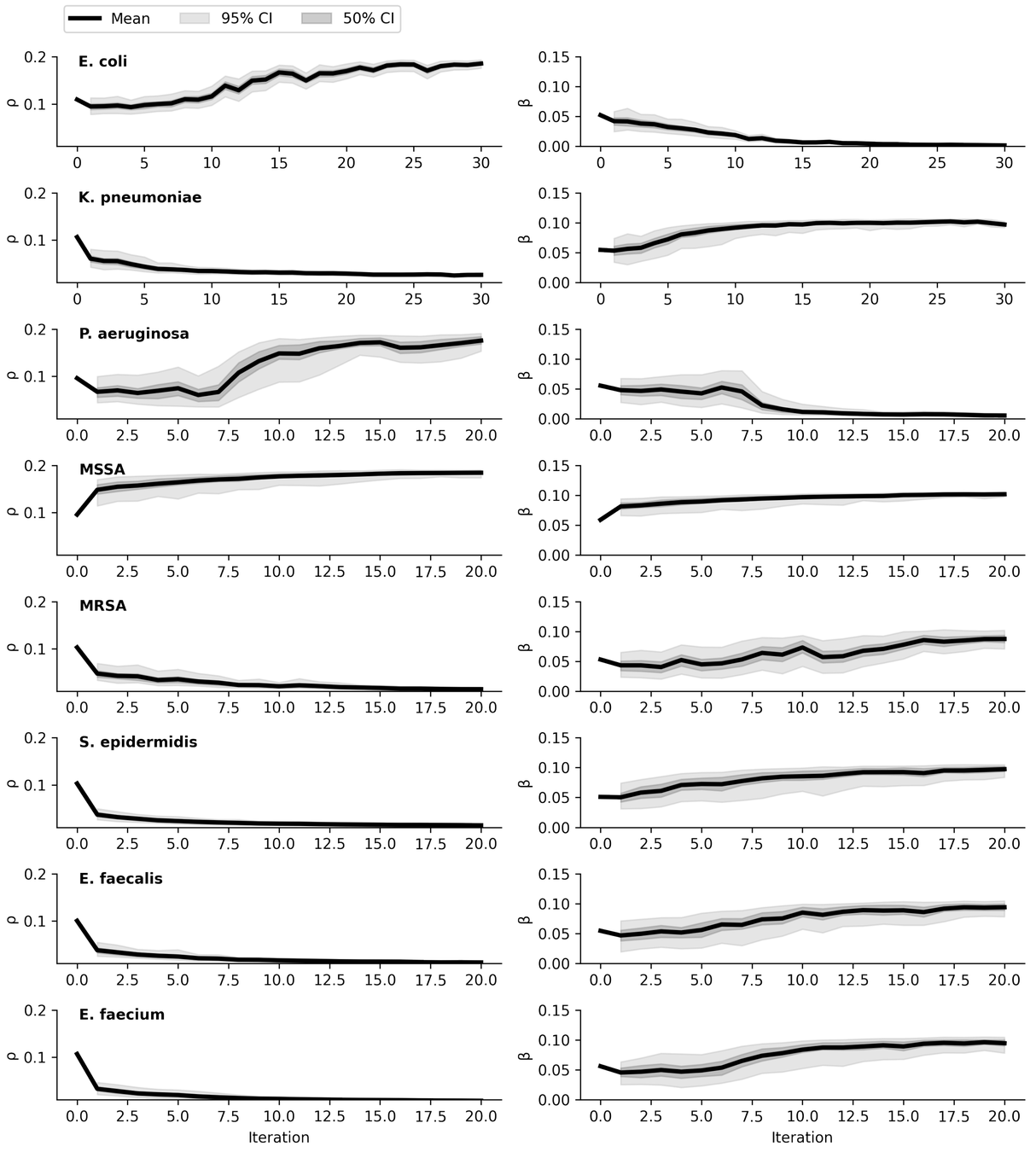


ABM inferences on real data

ABM inferences

Convergence plots - Individual level observational model

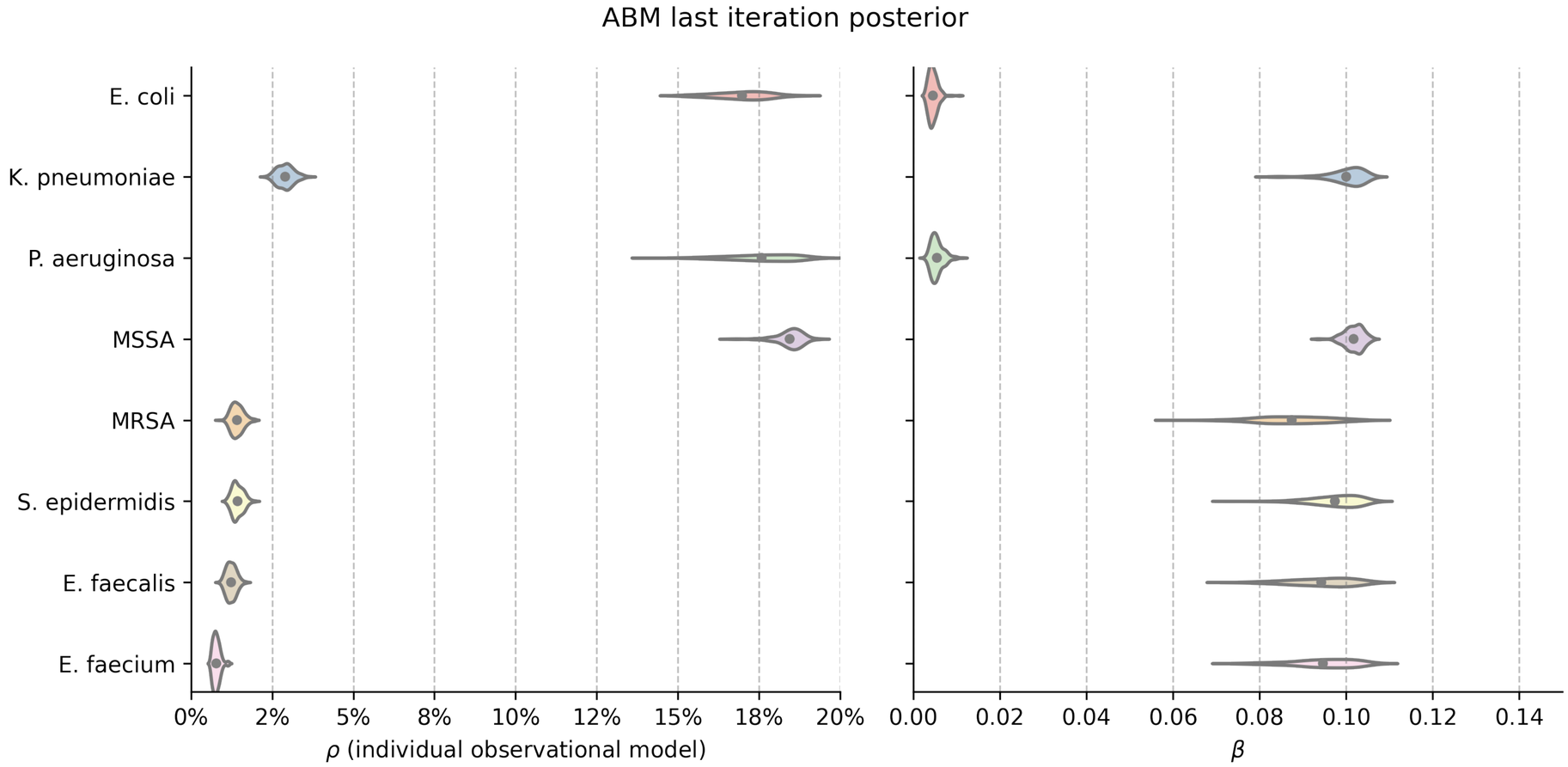
- Visually inspect convergence plots to see… convergence.
  - Convergences plots consistently look to asymptotically go to a specific value.



ABM inferences

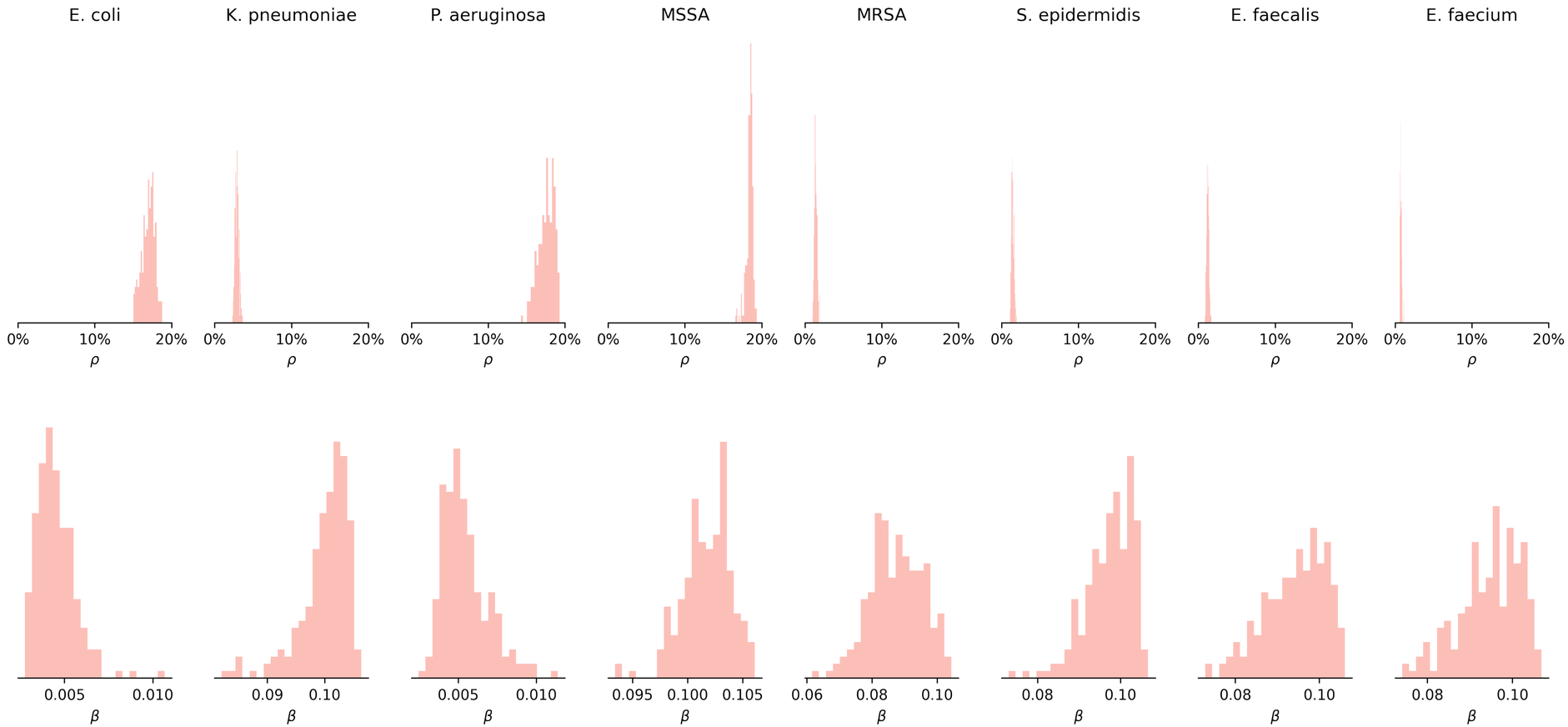
Posterior inferences

- Effective sensitivity around 1% for MRSA, *S. epidermis, E. faecalis, E. Faecium.*
- 2.1% for *K. Pneumonia*
- Around 18% for *E. coli, P. aeruginosa and MSSA*



ABM inferences

Posterior joint distributions and marginals



- Just another way to viz the posterior inferences.