Supplementary Figures

Prediction model performance with different imputation strategies – a simulation study using a North American intensive care unit registry

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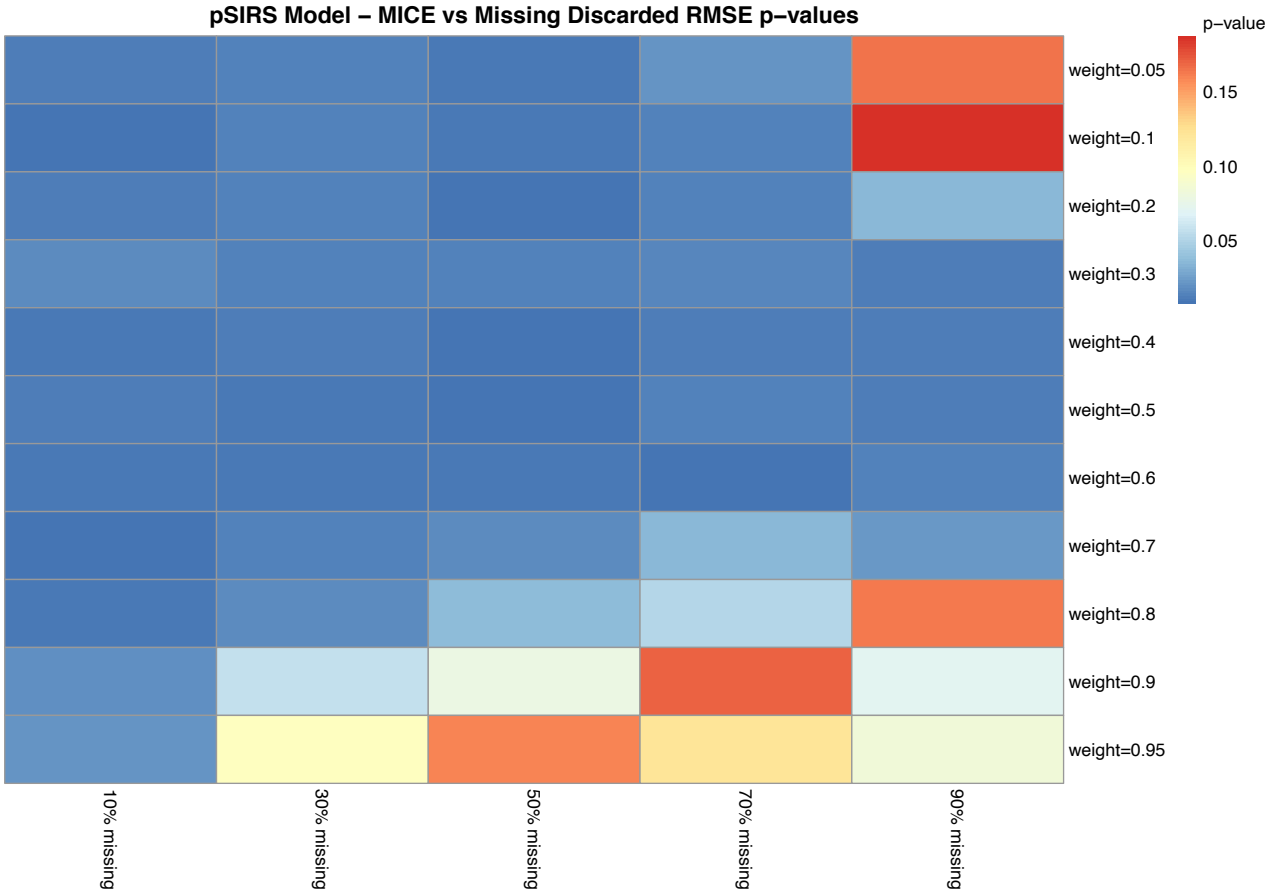
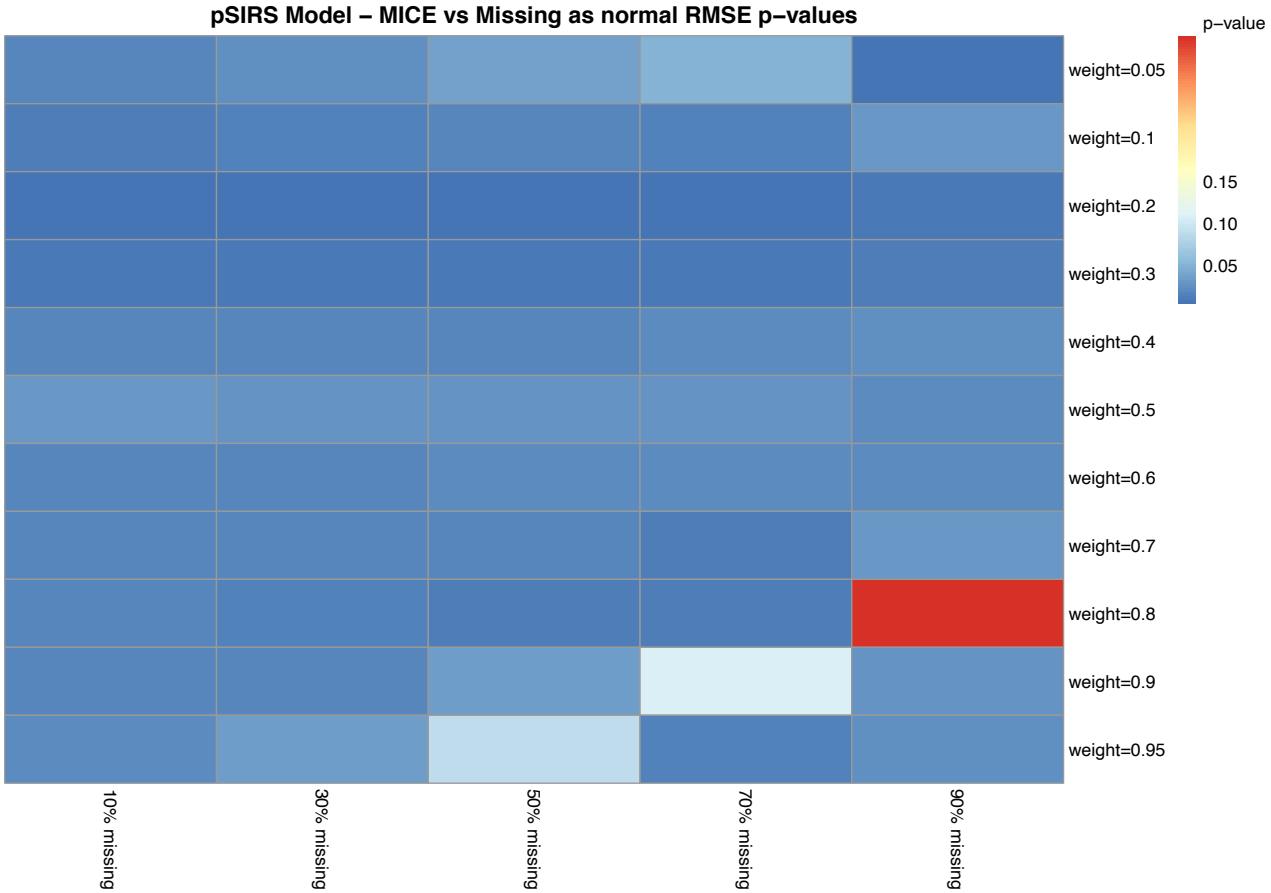
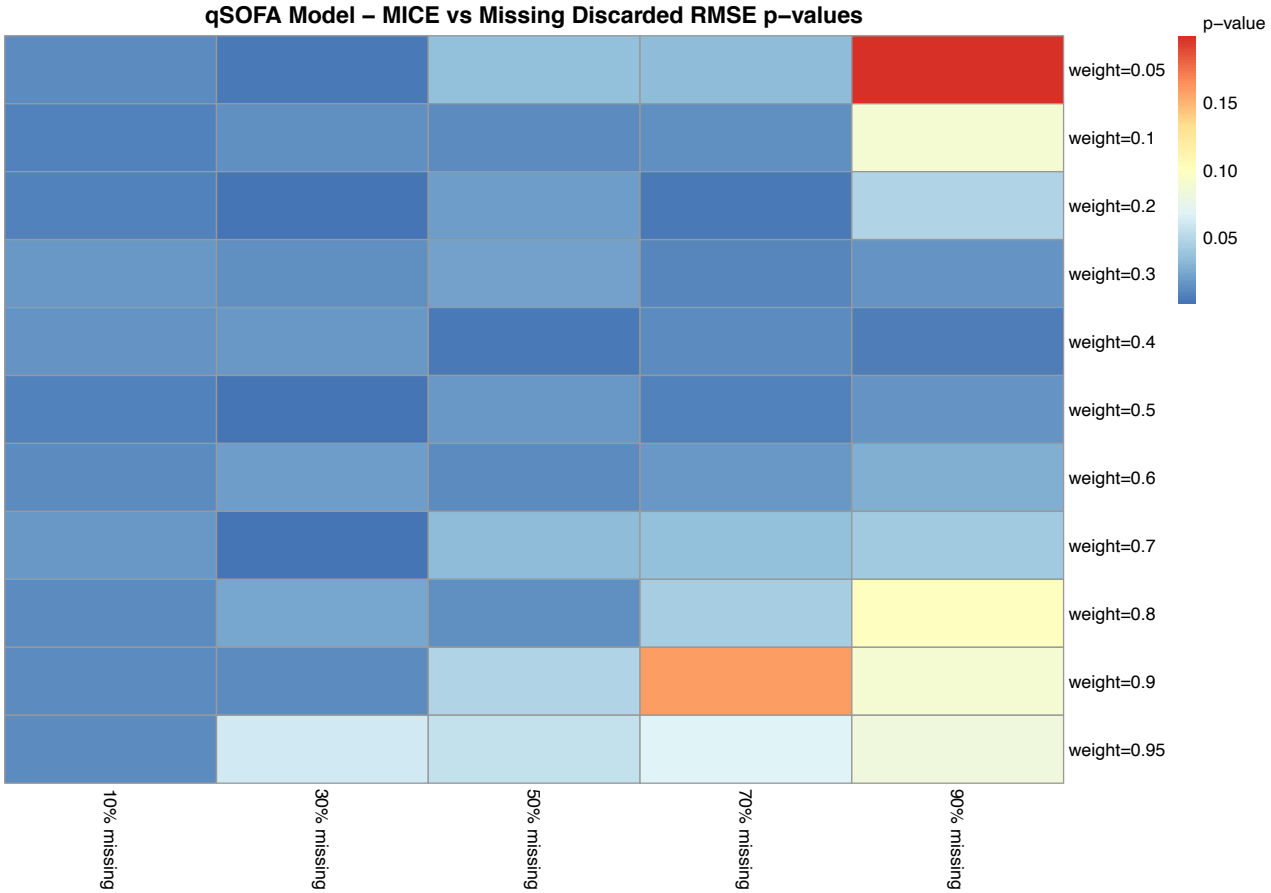


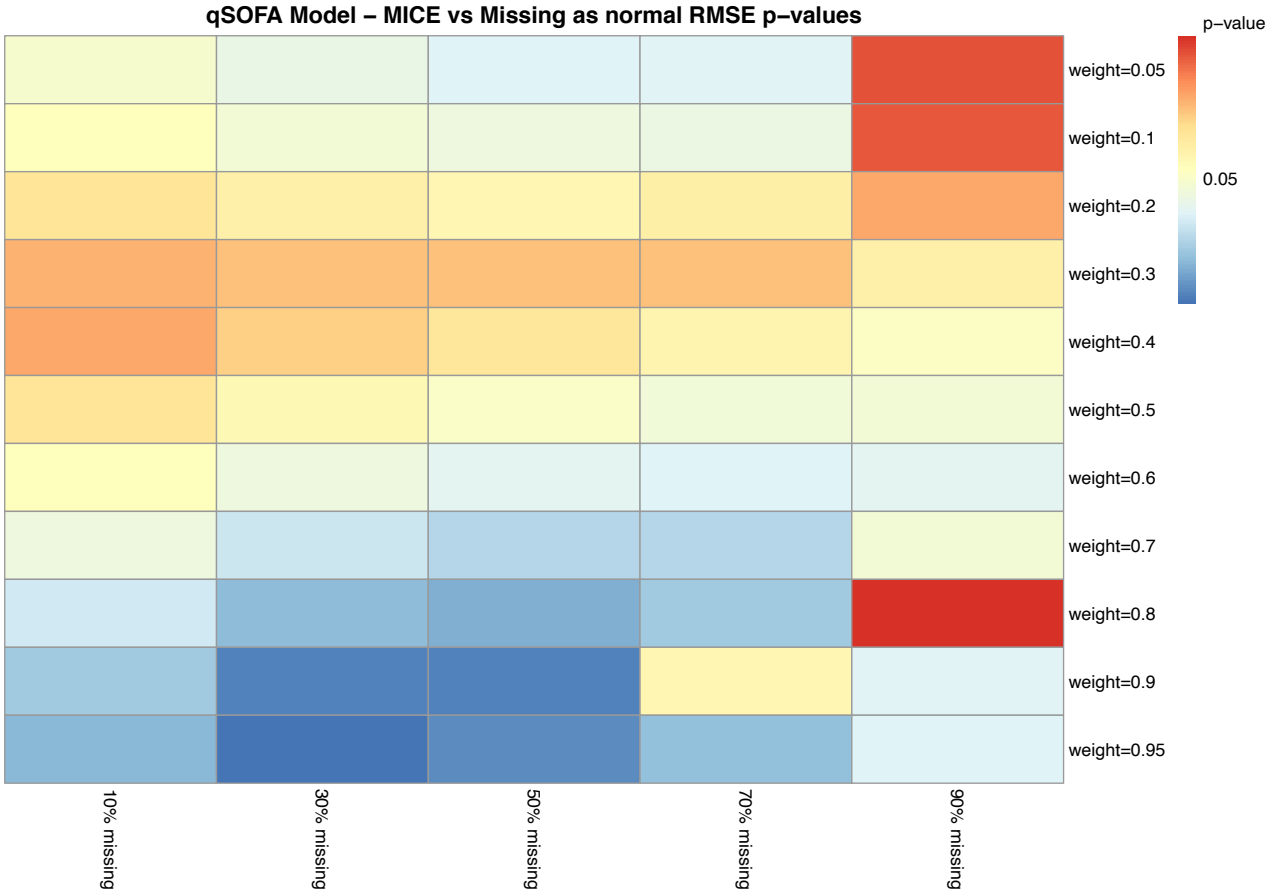
Supplementary Figure A: Heatmap of statistical significance (p-values) for comparison of root mean square error (RMSE) between multivariate imputation by chained equations (MICE) and complete case analysis (missing-discarded) on the pediatric systemic inflammatory response syndrome **(pSIRS) model,** when varying the amount of missingness from 10%, 30%, 50%, 70%, to 90% and varying the temperature sampling weight from 0.05 to 0.95.



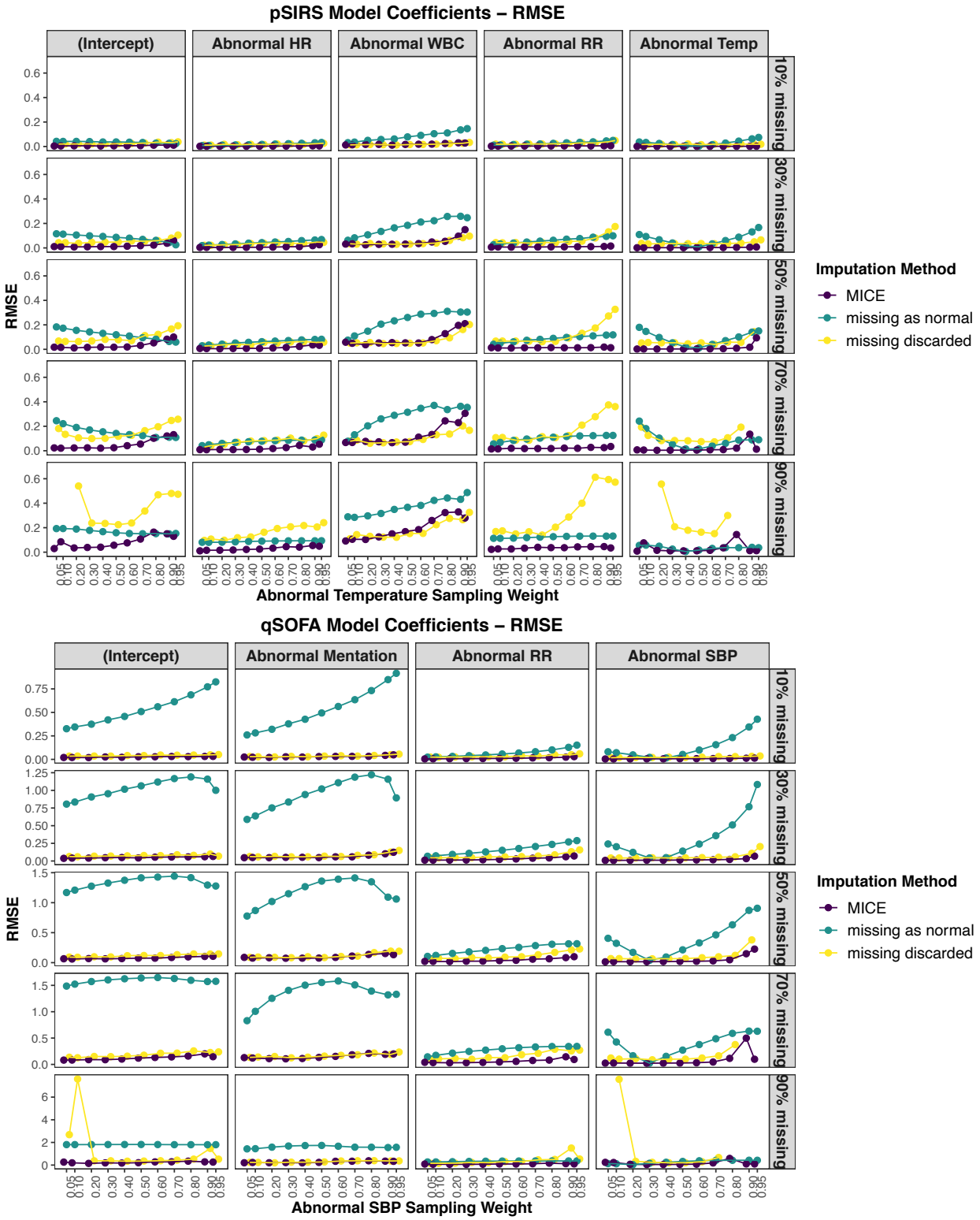
Supplementary Figure B: Heatmap of statistical significance (p-values) for comparison of root mean square error (RMSE) between multivariate imputation by chained equations (MICE) and missing-as-normal on **the** pediatric systemic inflammatory response syndrome **(pSIRS) model,** when varying the amount of missingness from 10%, 30%, 50%, 70%, to 90% and varying the temperature sampling weight from 0.05 to 0.95.



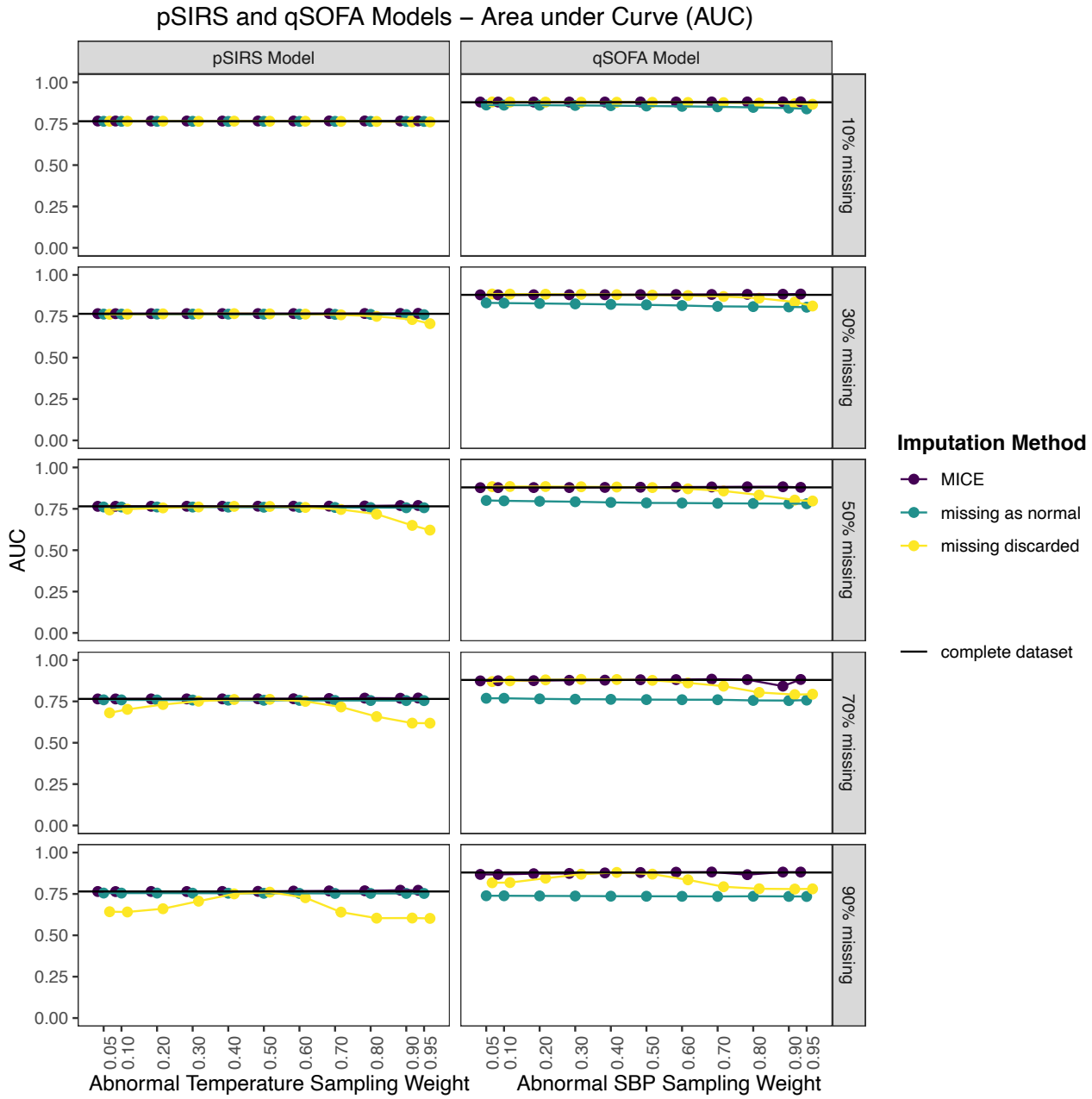
Supplementary Figure C: Heatmap of statistical significance (p-values) for comparison of root mean square error (RMSE) between multivariate imputation by chained equations (MICE) and complete case analysis (missing-discarded) on the Sequential [Sepsis-Related] Organ Failure Assessment (**qSOFA) model,** when varying the amount of missingness from 10%, 30%, 50%, 70%, to 90% and varying the temperature sampling weight from 0.05 to 0.95.



Supplementary Figure D: Heatmap of statistical significance (p-values) for comparison of root mean square error (RMSE) between multivariate imputation by chained equations (MICE) and missing-as-normal on the Sequential [Sepsis-Related] Organ Failure Assessment (**qSOFA) model,** when varying the amount of missingness from 10%, 30%, 50%, 70%, to 90% and varying the temperature sampling weight from 0.05 to 0.95.



Supplementary Figure E: **Root mean square error (RMSE)** for model coefficients when varying the amounts of missingness from 10% (top row of plots), over 30%, 50%, 70%, to 90% (bottom row of plots). The model coefficients for **pediatric systemic inflammatory response syndrome** (**pSIRS**, top subplot) included the intercept, as well as abnormal heart rate (HR), white blood cell counts (WBC), respiratory rate (RR), and temperature (Temp). The model coefficients for the **quick Sequential [Sepsis-Related] Organ Failure Assessment** (**qSOFA**, bottom subplot) included the intercept, as well as abnormal mentation, respiratory rate (RR), and systolic blood pressure (SBP).



Supplementary Figure F: Area under the receiver operating characteristic curve (AUC) for the pediatric systemic inflammatory response syndrome **(pSIRS) model** (left column of plots) and Sequential [Sepsis-Related] Organ Failure Assessment (**qSOFA) model** (right column of plots) when varying the amount of missingness from 10%, 30%, 50%, 70%, to 90% for the three imputation approaches: multivariate imputation by chained equations (MICE), complete case analysis (missing-discarded), and missing-as-normal. The reference line shows the AUC from the complete population datasets.