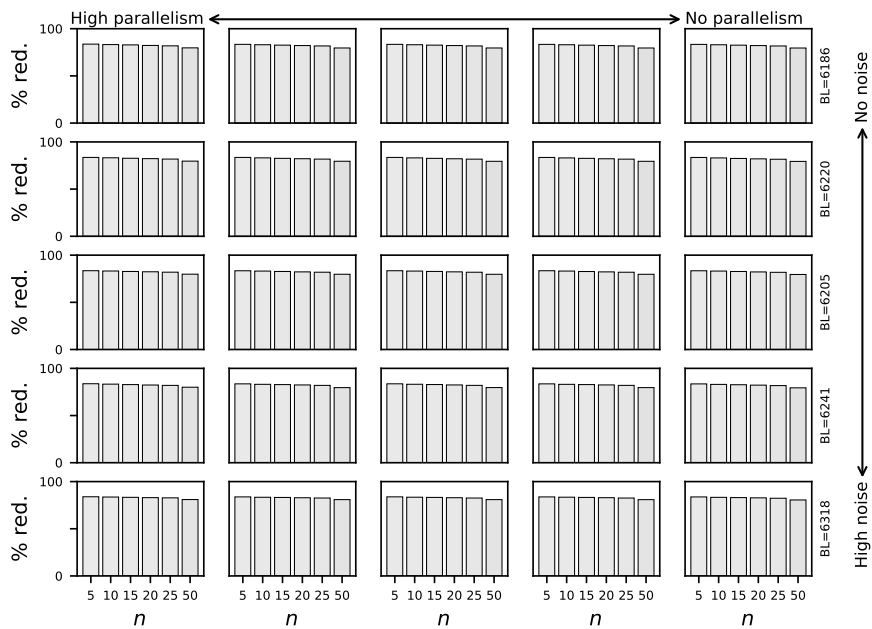


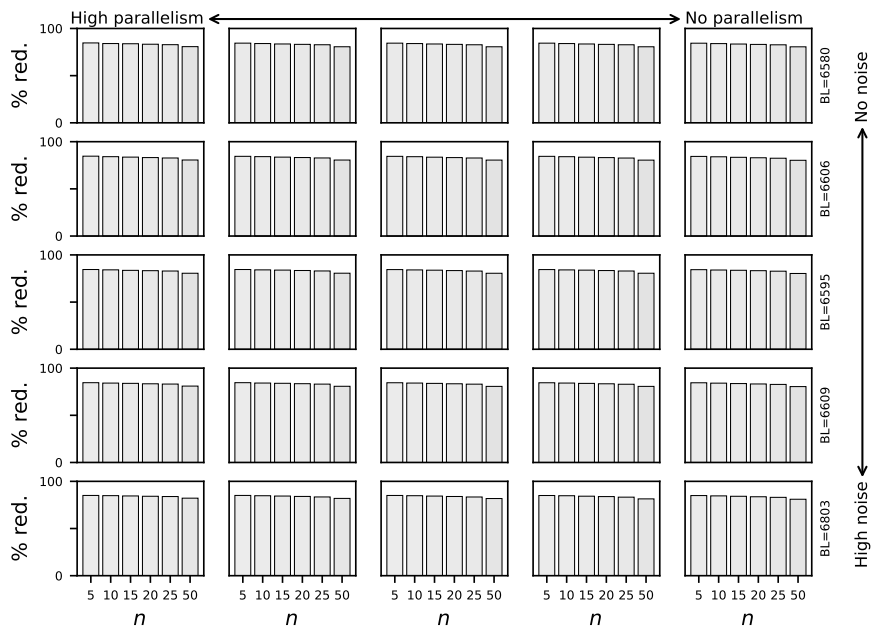
Appendix 5

.1 Bounding Cases with Carry-forward Marking and $\text{Cost}(CFc)$.

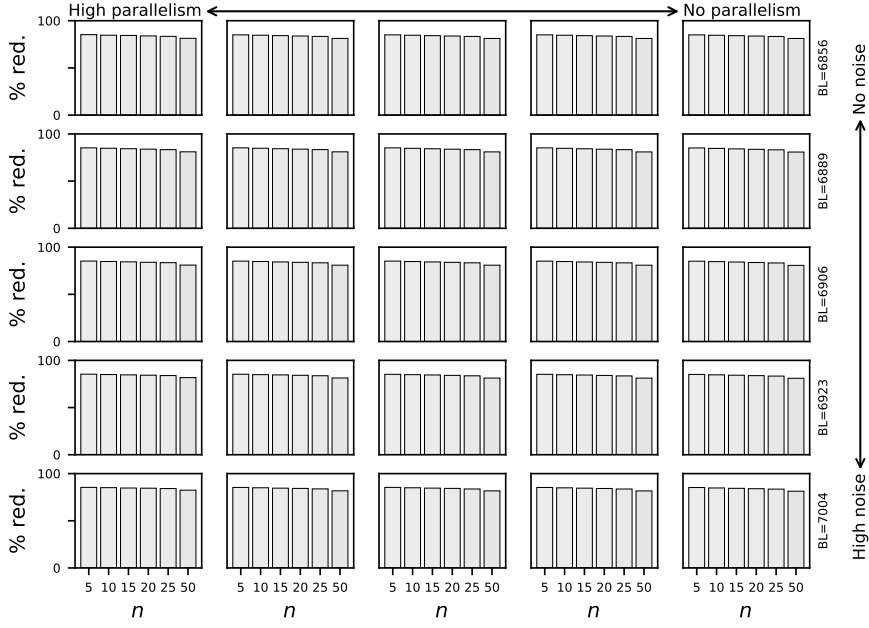
In this section, we provide the complete set of results for the experiments with a_{12} , a_{22} , and a_{32} synthetic events logs for the CFc stateful approach.



(a) Skewness of decisions level 0

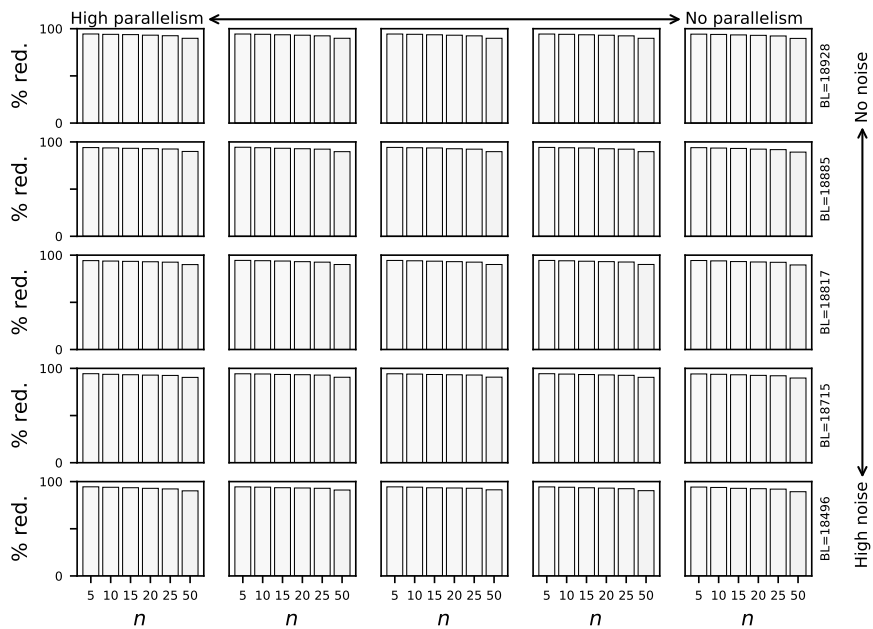


(b) Skewness of decisions level 1

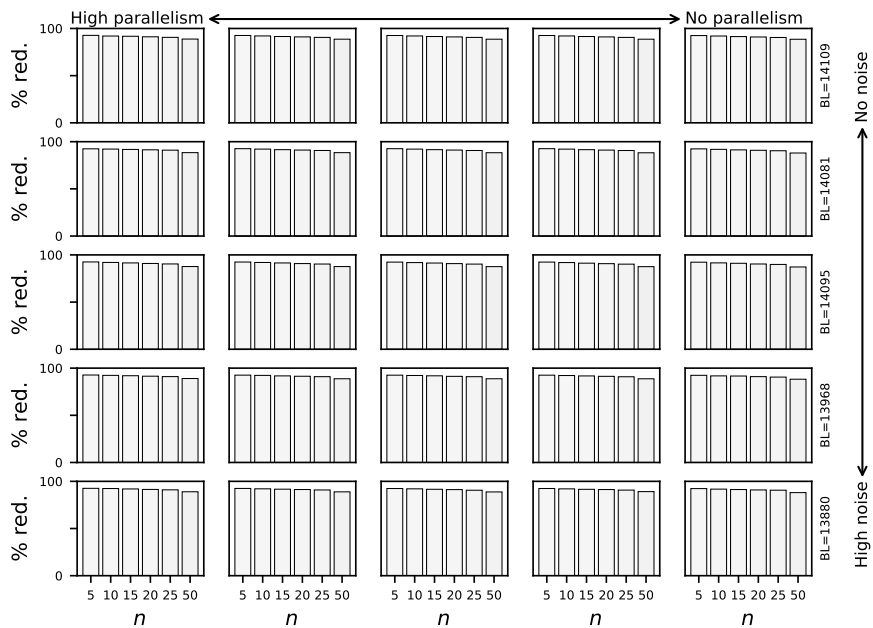


(c) Skewness of decisions level 2

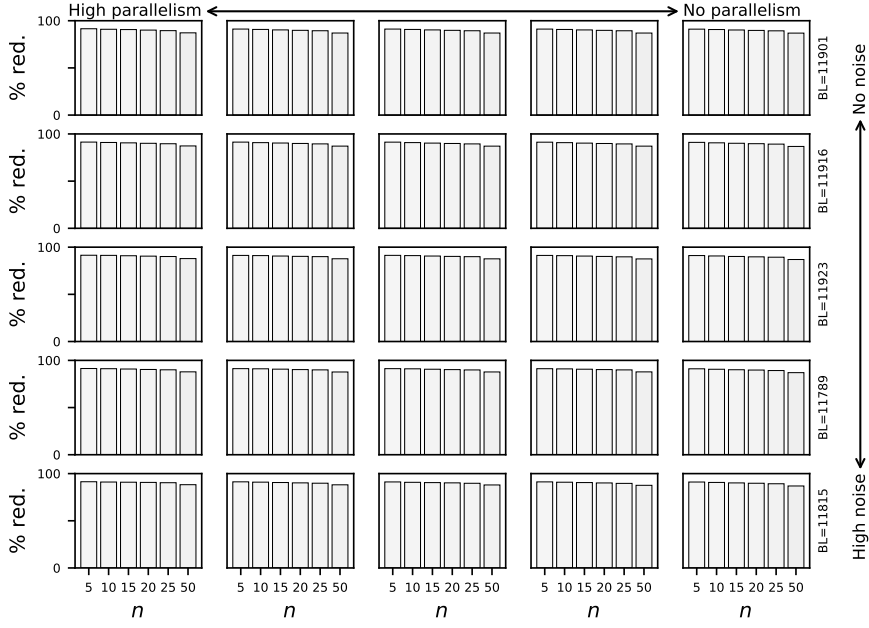
Figure 33: Percentage reduction in memory footprint w.r.t. the baseline (BL) for *a12* event logs with different skewness of decisions and noise levels with *CFc* as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The value w on the X-axis is the maximum number of states allowed to be retained in D_C . The number on the secondary Y-axis is the maximum states consumed by the baseline (BL).



(a) Skewness of decisions level 0

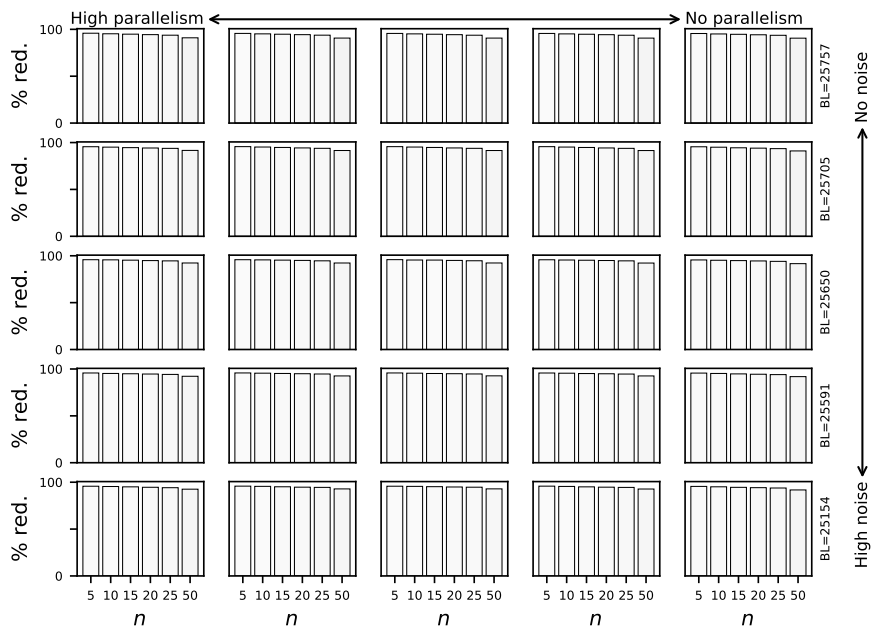


(b) Skewness of decisions level 1

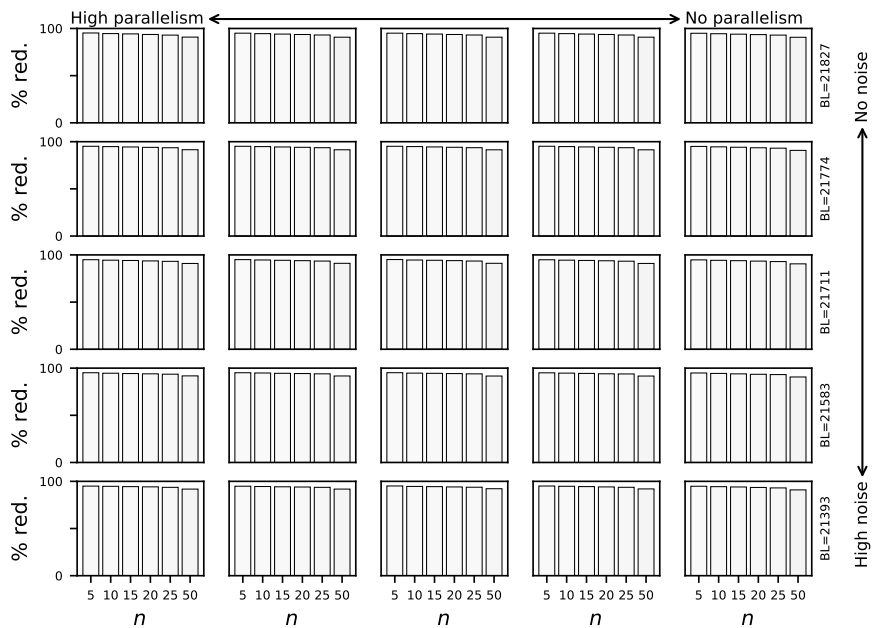


(c) Skewness of decisions level 2

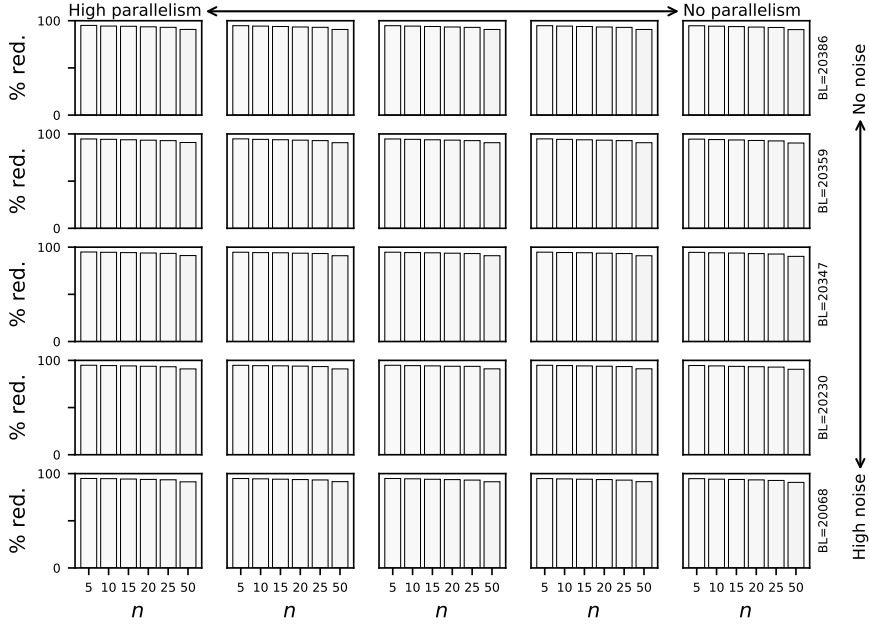
Figure 34: Percentage reduction in memory footprint w.r.t. the baseline (BL) for *a22* event logs with different skewness of decisions and noise levels with *CFc* as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The value w on the X-axis is the maximum number of states allowed to be retained in D_C . The number on the secondary Y-axis is the maximum states consumed by the baseline (BL).



(a) Skewness of decisions level 0

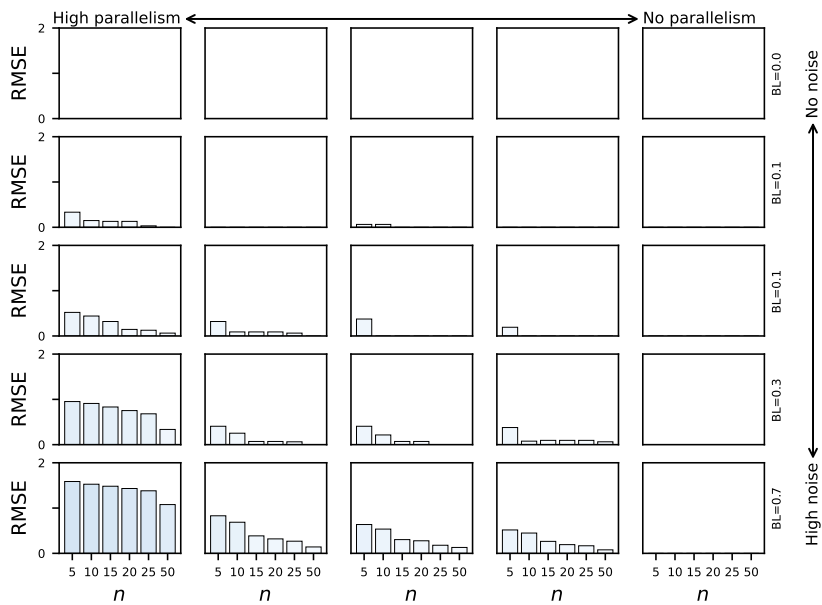


(b) Skewness of decisions level 1

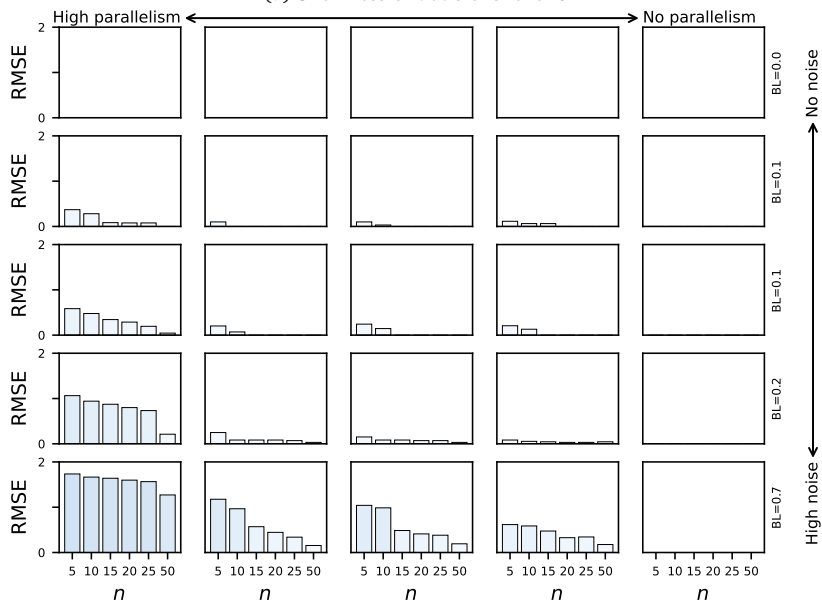


(c) Skewness of decisions level 2

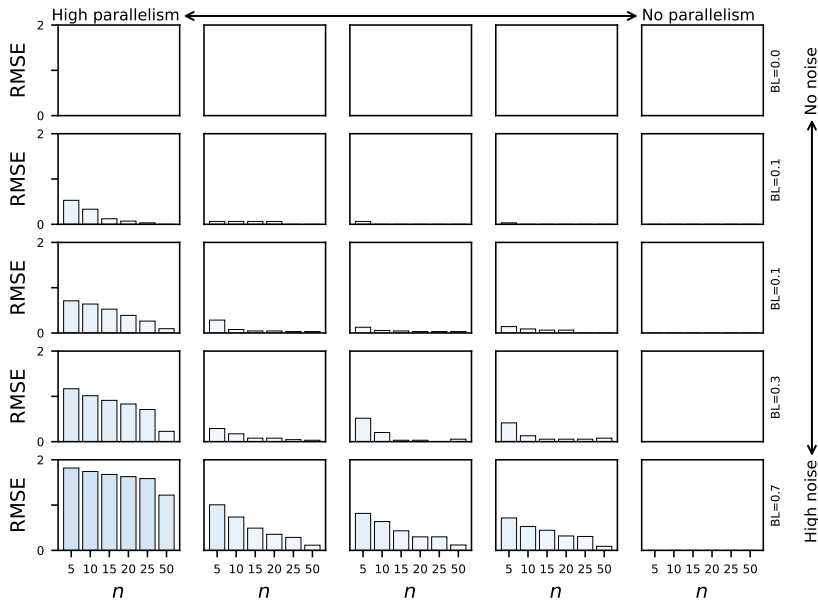
Figure 35: Percentage reduction in memory footprint w.r.t. the baseline (BL) for $a32$ event logs with different skewness of decisions and noise levels with CFc as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The value w on the X-axis is the maximum number of states allowed to be retained in D_C . The number on the secondary Y-axis is the maximum states consumed by the baseline (BL).



(a) Skewness of decisions level 0

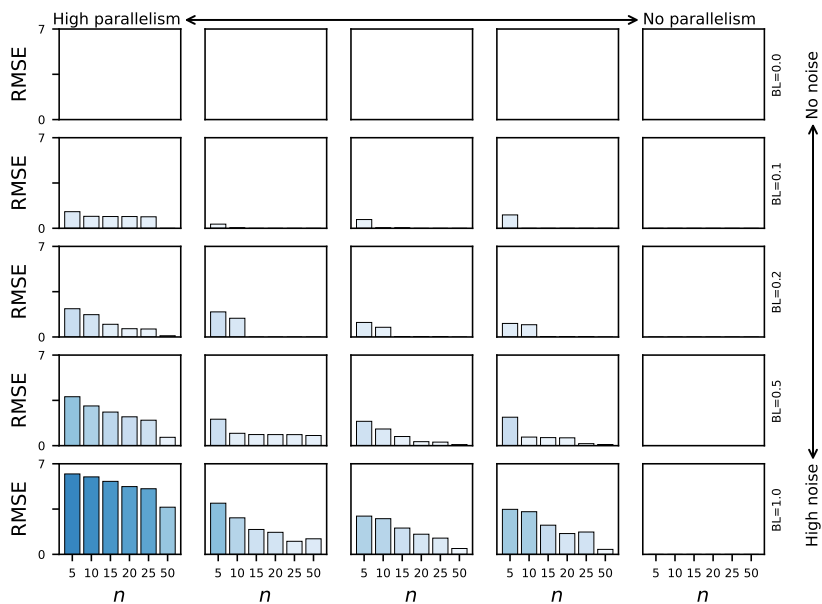


(b) Skewness of decisions level 1

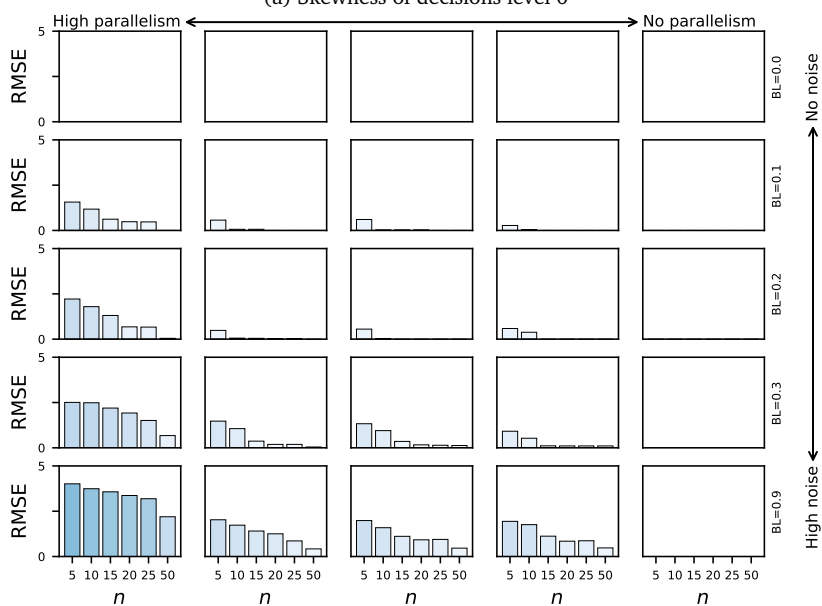


(c) Skewness of decisions level 2

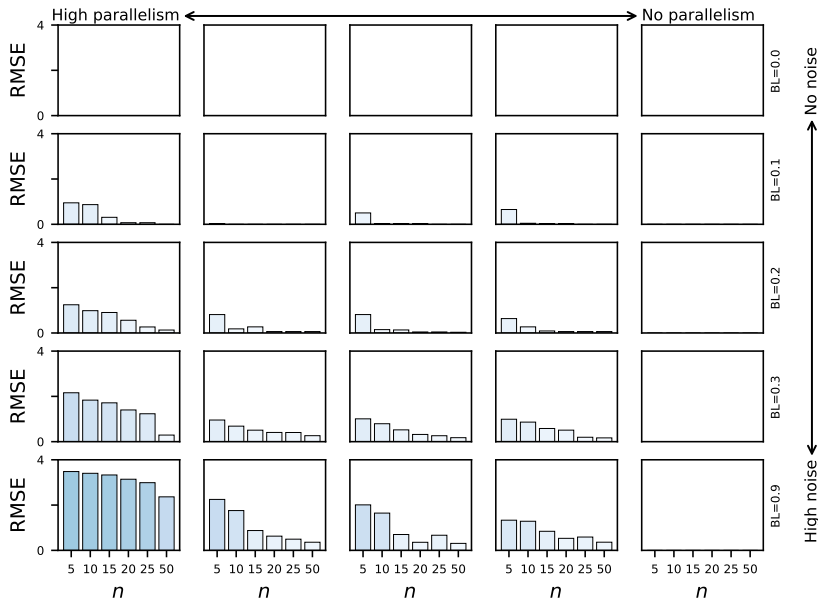
Figure 36: RMSE for *a12* event logs with different decision skewness and noise levels with *Cfc* as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The number on the secondary Y-axis is the avg. trace fitness cost over the log by the baseline(BL).



(a) Skewness of decisions level 0

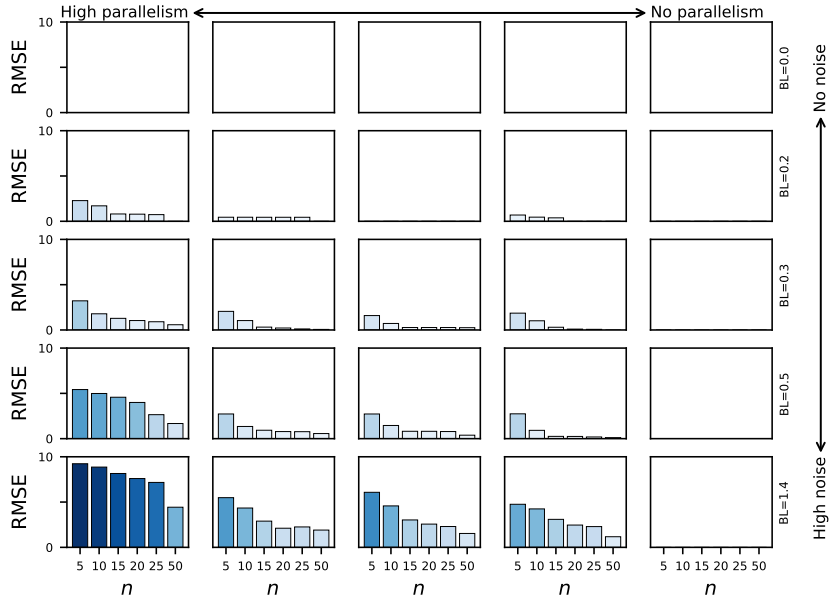


(b) Skewness of decisions level 1

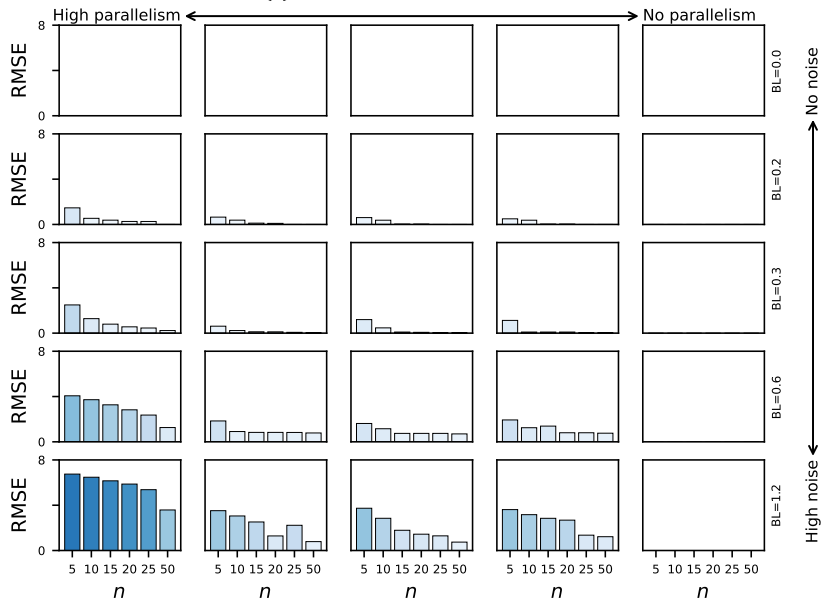


(c) Skewness of decisions level 2

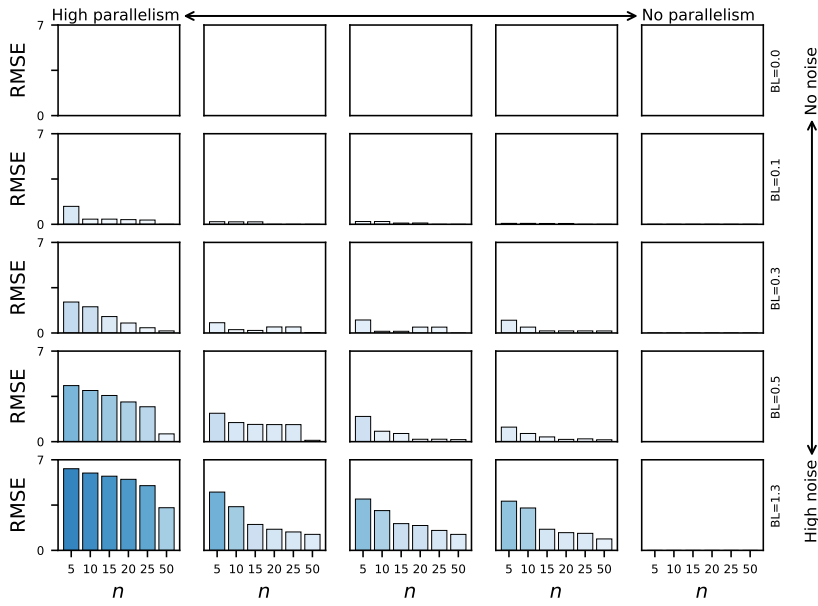
Figure 37: RMSE for *a22* event logs with different decision skewness and noise levels with *Cfc* as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The number on the secondary Y-axis is the avg. trace fitness cost over the log by the baseline(BL).



(a) Skewness of decisions level 0

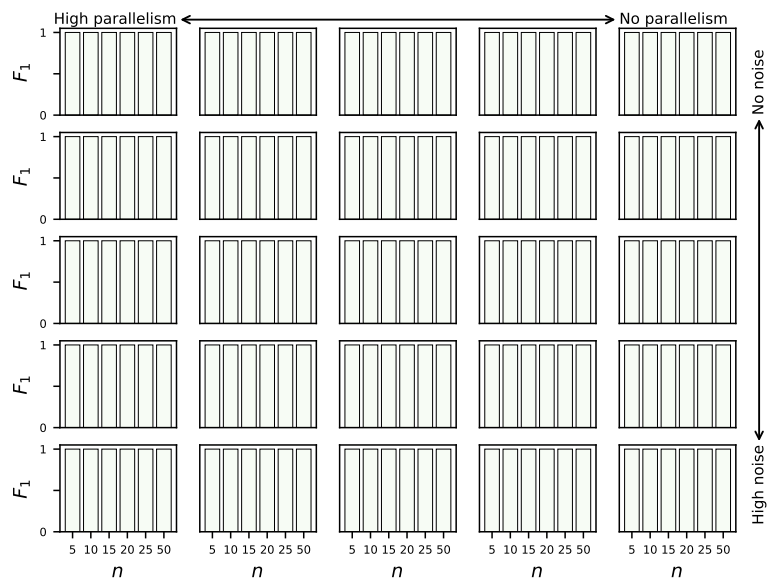


(b) Skewness of decisions level 1

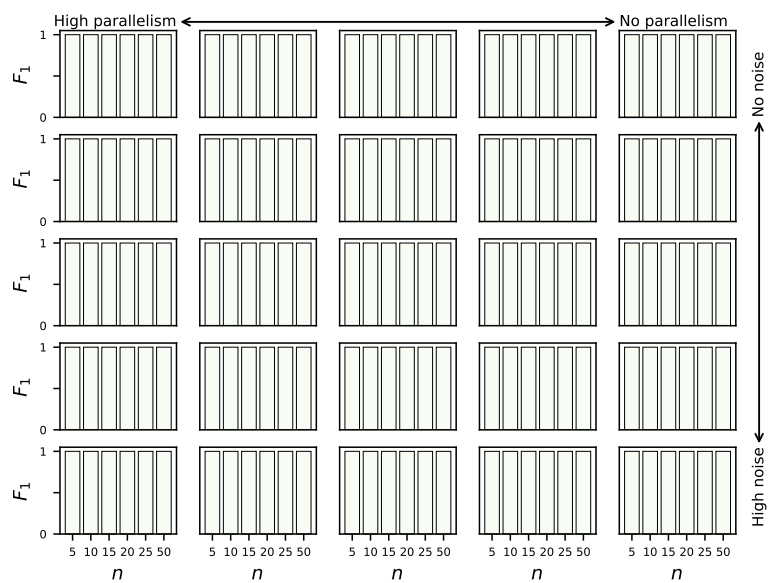


(c) Skewness of decisions level 2

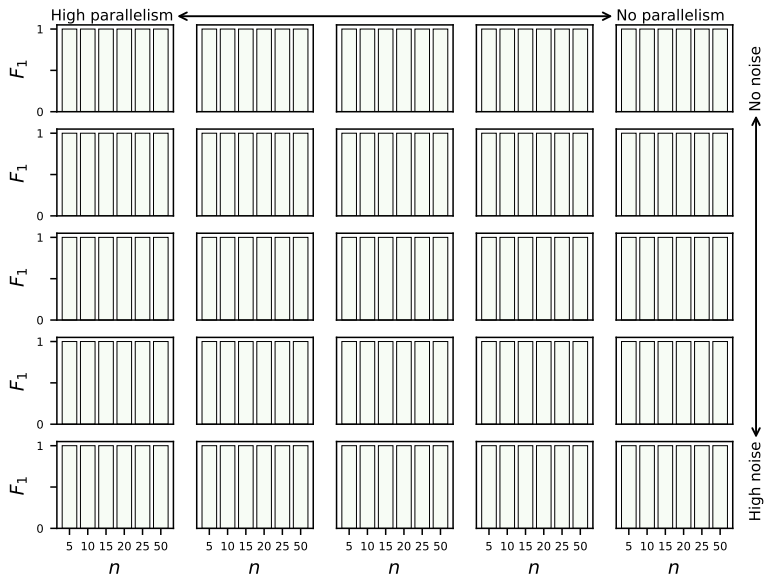
Figure 38: RMSE for *a32* event logs with different decision skewness and noise levels with *Cfc* as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values. The number on the secondary Y-axis is the avg. trace fitness cost over the log by the baseline(BL).



(a) Skewness of decisions level 0

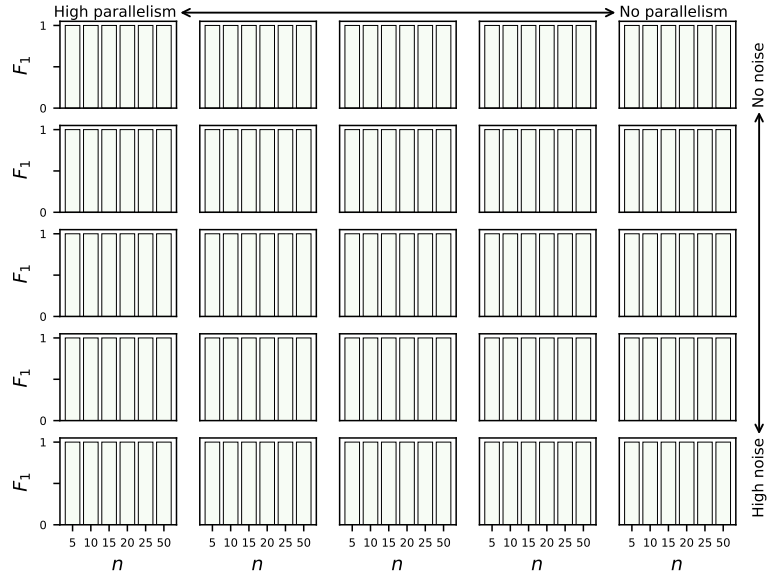


(b) Skewness of decisions level 1

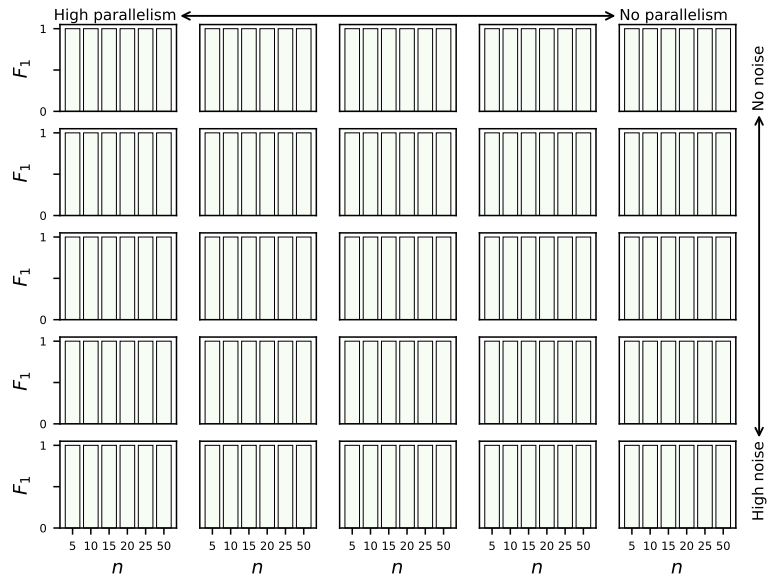


(c) Skewness of decisions level 2

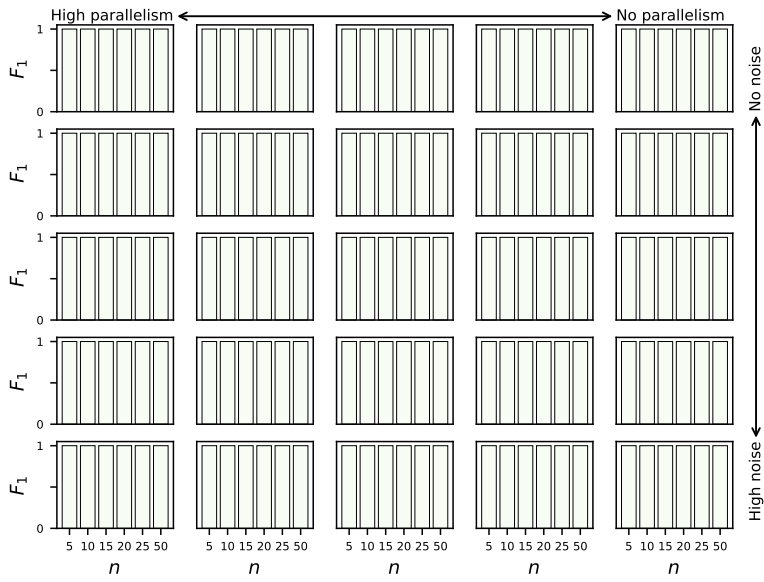
Figure 39: F_1 for $a12$ event logs with different decision skewness and noise levels with CFC as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values.



(a) Skewness of decisions level 0

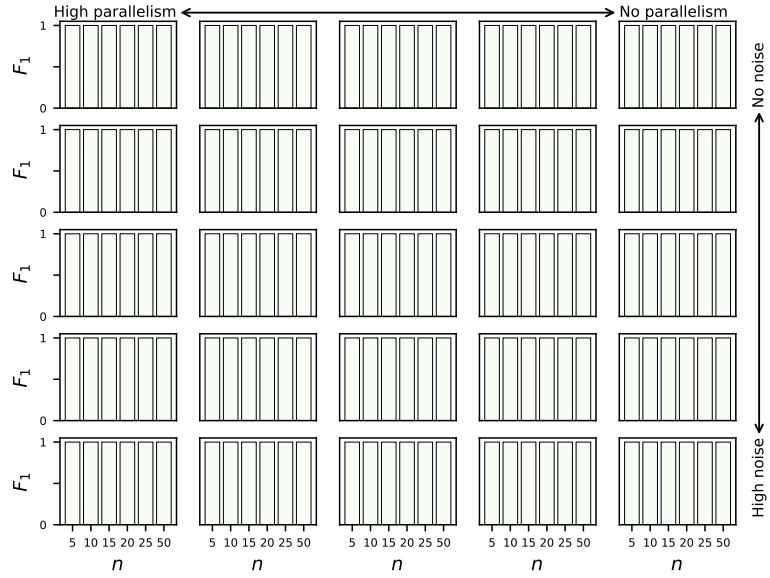


(b) Skewness of decisions level 1

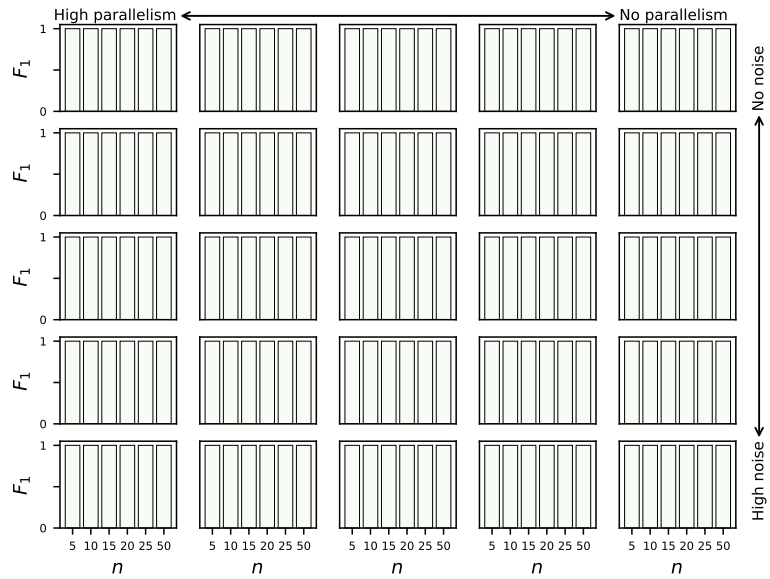


(c) Skewness of decisions level 2

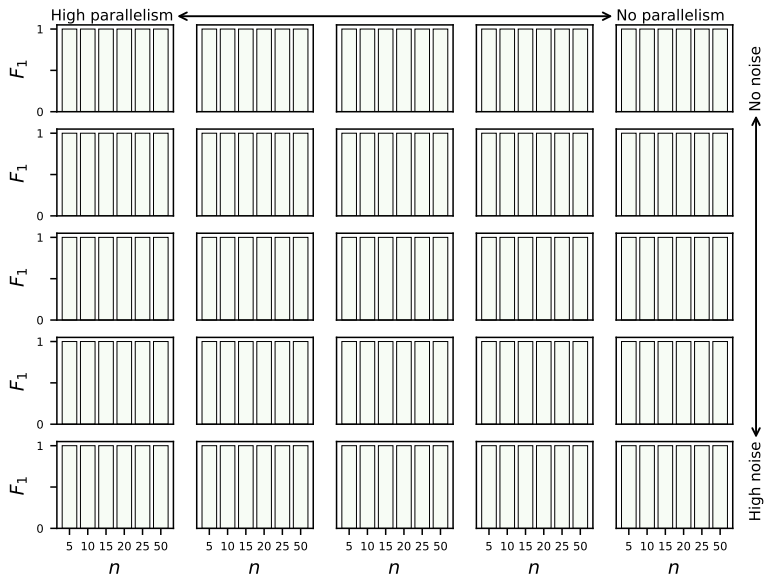
Figure 40: F_1 for $a22$ event logs with different decision skewness and noise levels with Cfc as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values.



(a) Skewness of decisions level 0



(b) Skewness of decisions level 1



(c) Skewness of decisions level 2

Figure 41: F_1 for $a32$ event logs with different decision skewness and noise levels with CFC as a heatmap. A dark color represents the worst value of the respective metric, while brighter colors encapsulate its best values.