

Is it Still Fair? A Comparative Evaluation of Fairness Algorithms through the Lens of Covariate Drift-Supplementary

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CCS CONCEPTS

- Computing methodologies → Regularization; Multi-agent systems;
- Applied computing → Law; *Interactive learning environments*;
- Information systems → Clustering and classification.

KEYWORDS

Algorithmic Fairness, Covariate Drift, Fairness Algorithms, Robustness

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1 ROBUSTNESS OF FAIRNESS-AWARE-MODELS IN TERMS OF FAIRNESS AND PREDICTIVE PERFORMANCE

1.1 COMPAS Dataset

1.2 BAF Dataset

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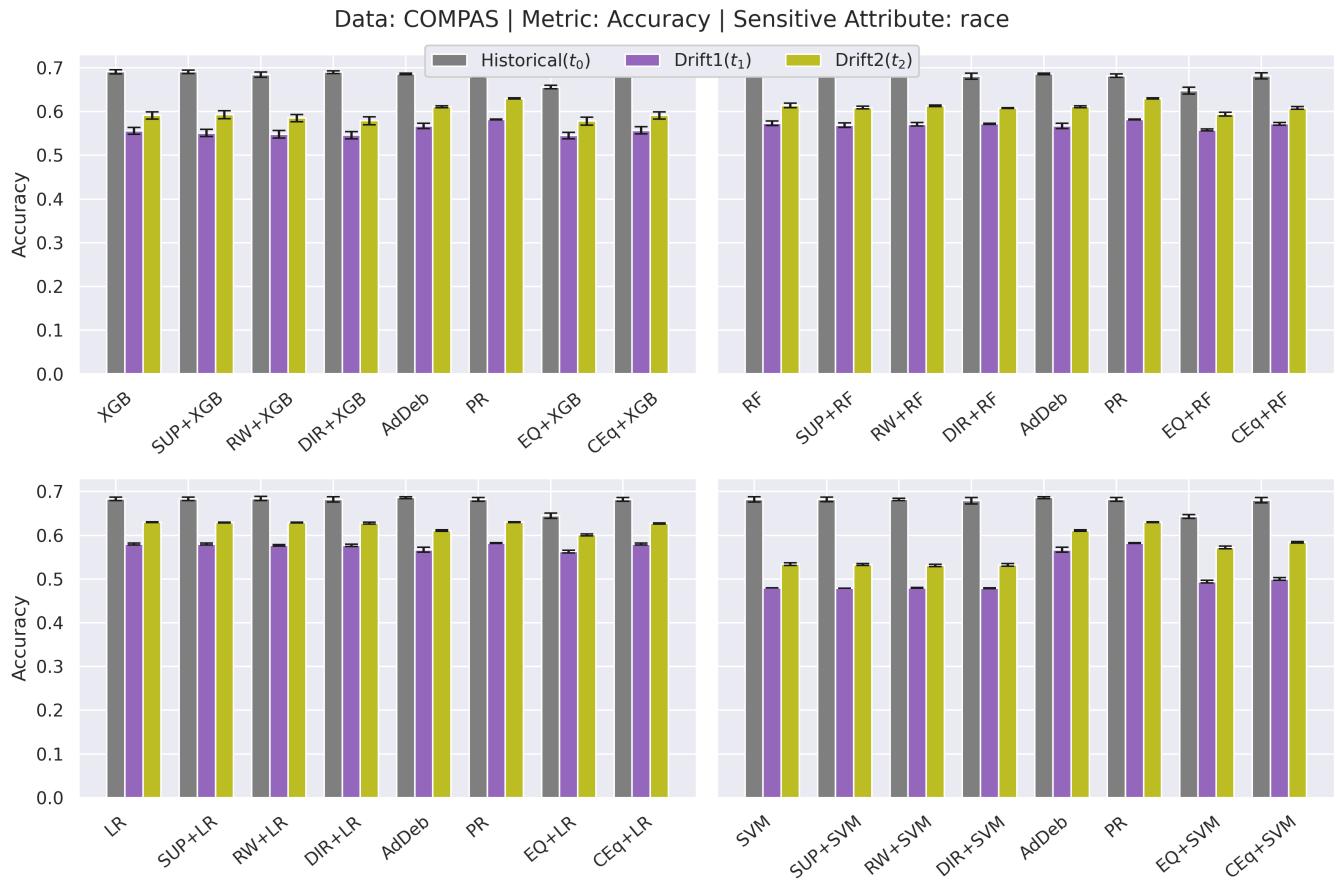


Figure 1: Accuracy for COMPAS dataset.

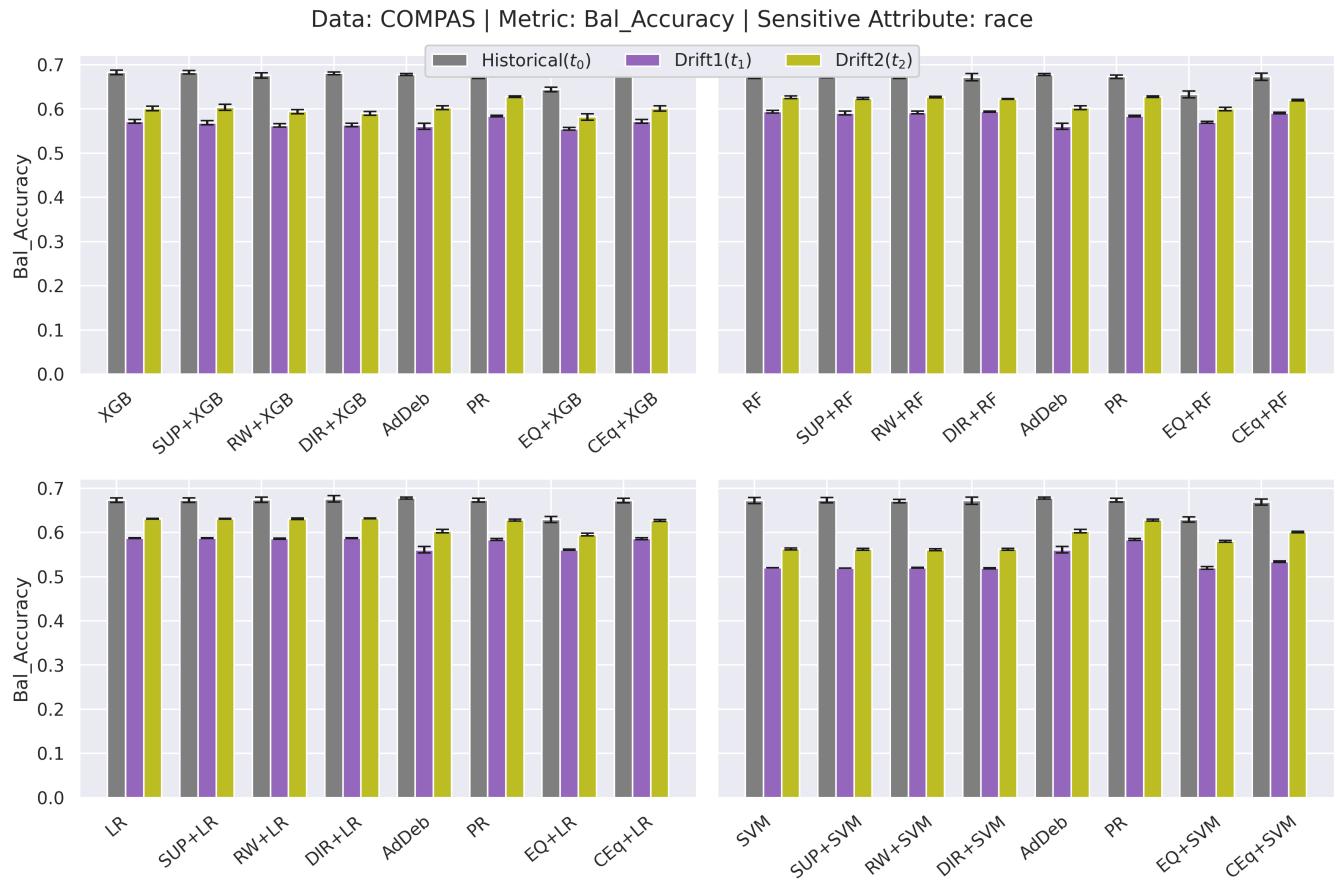


Figure 2: Balanced Accuracy for COMPAS dataset.

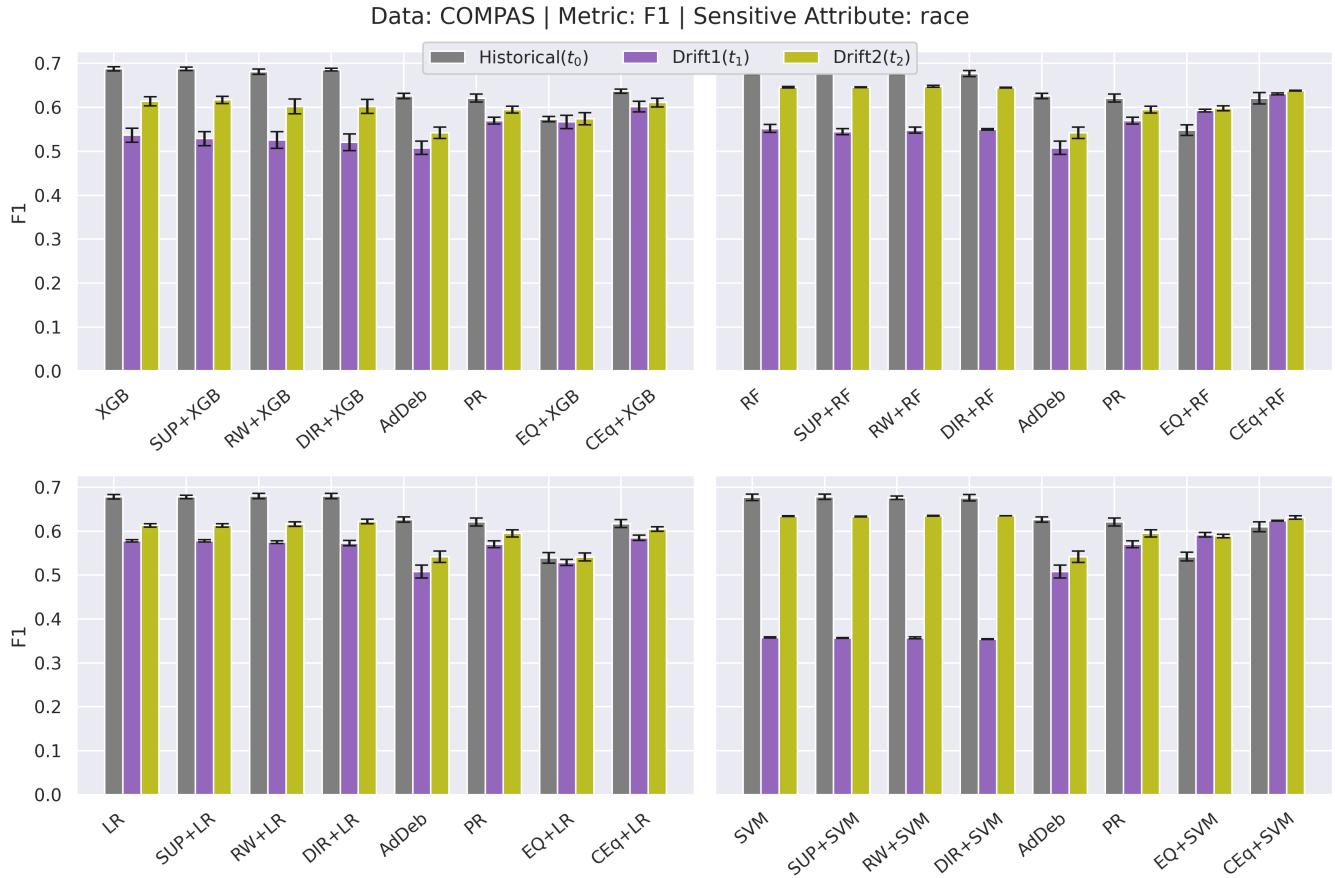
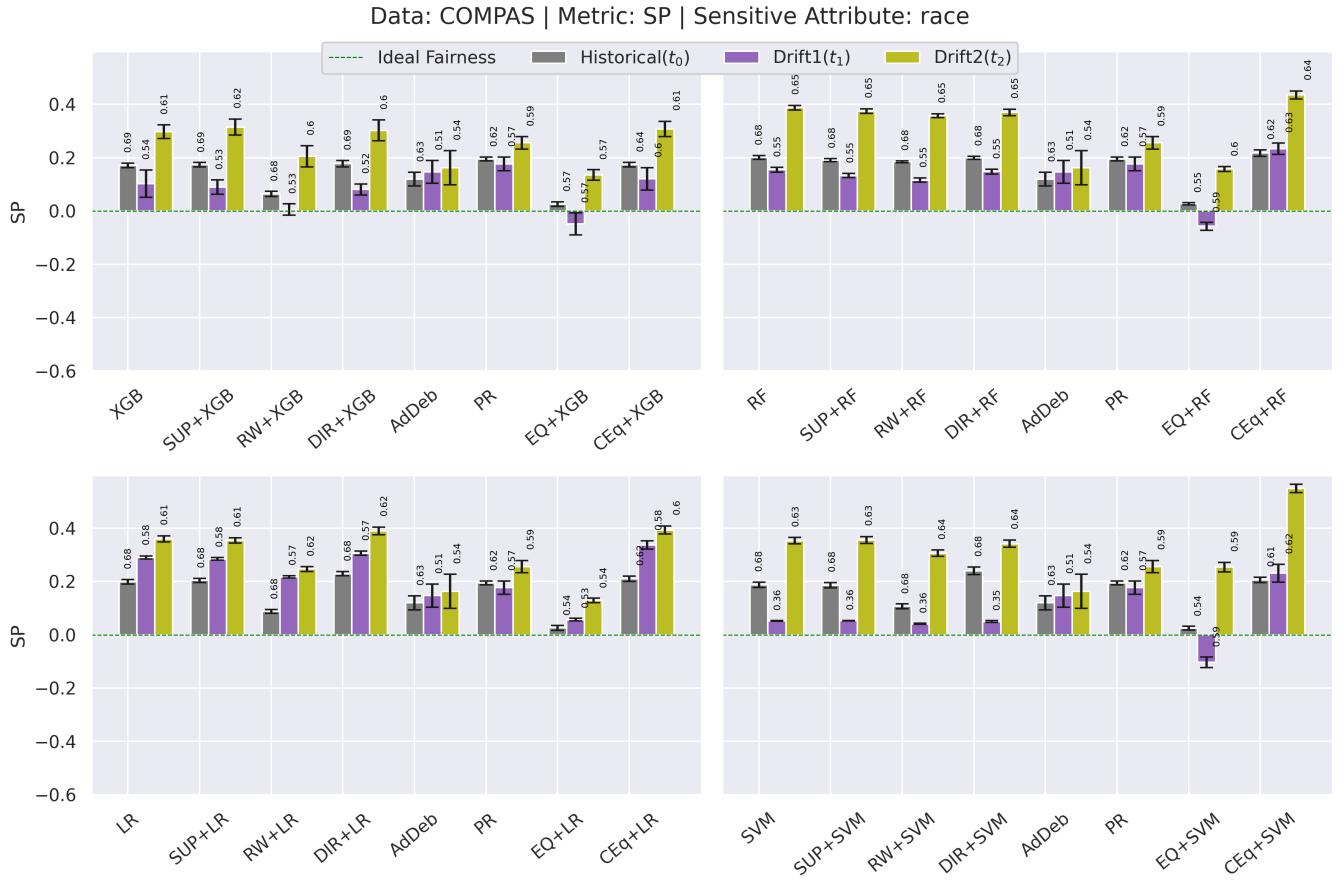


Figure 3: F1 for COMPAS dataset.

**Figure 4: SP for COMPAS dataset.**

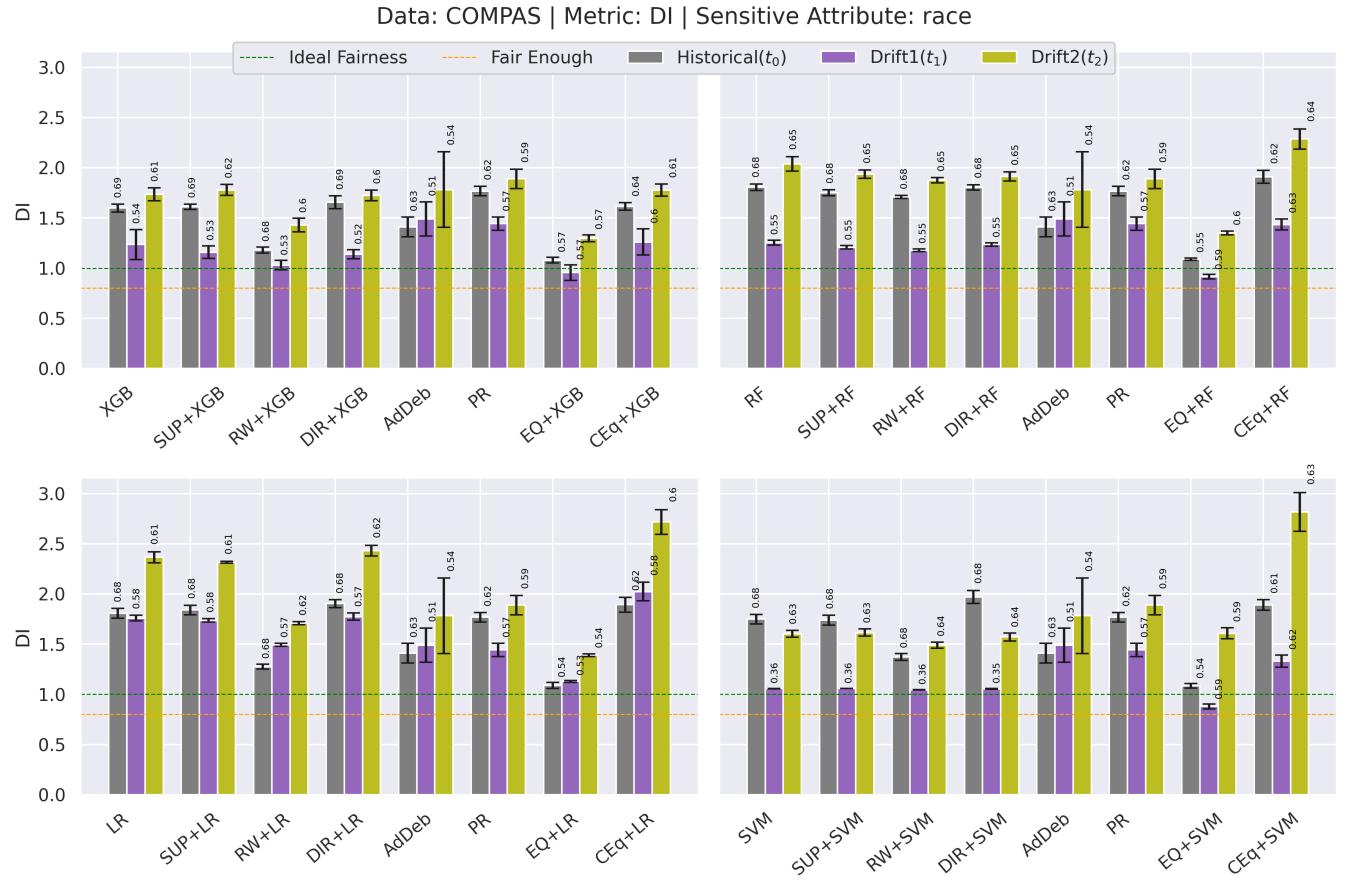


Figure 5: DI for COMPAS dataset.

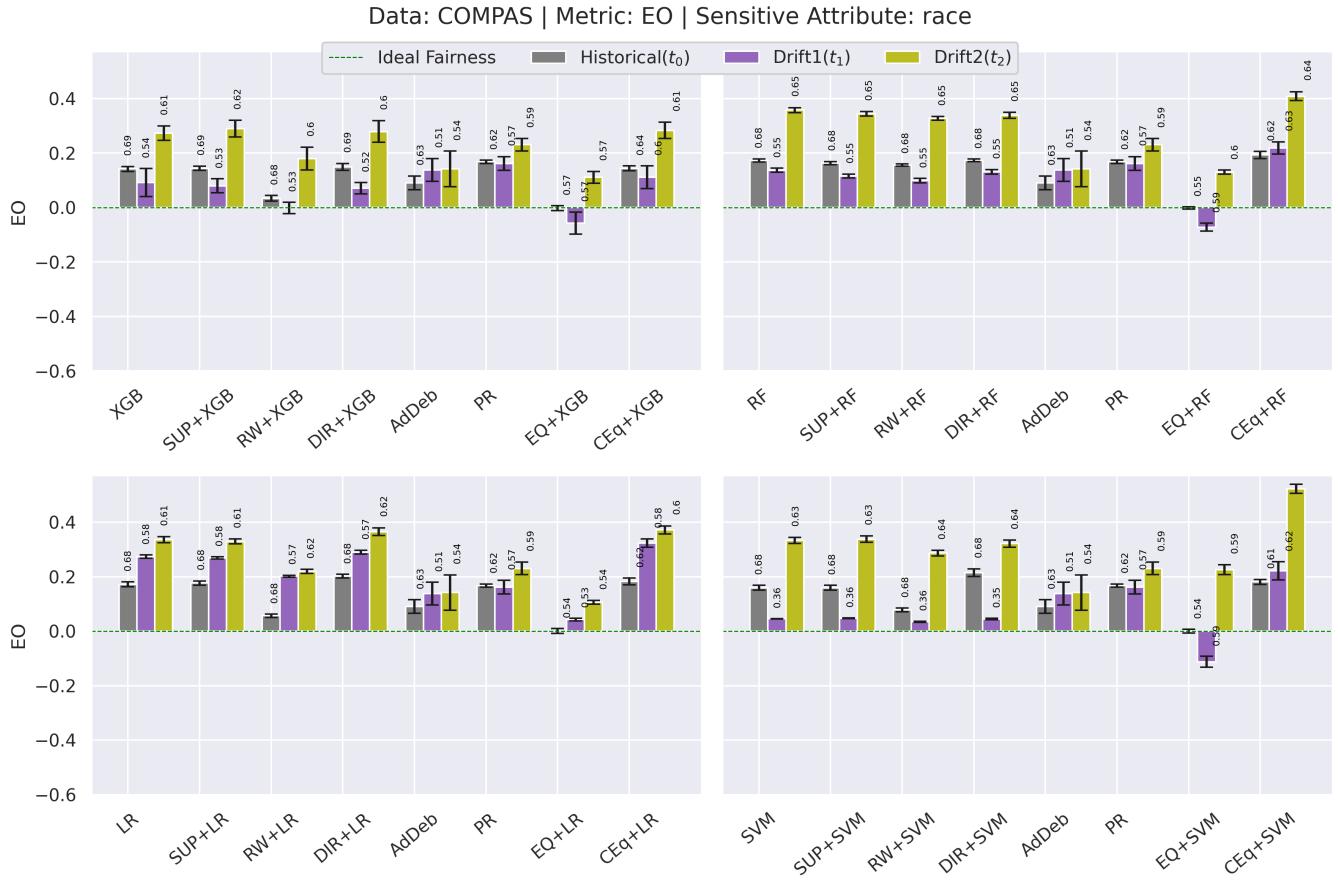


Figure 6: EO for COMPAS dataset.

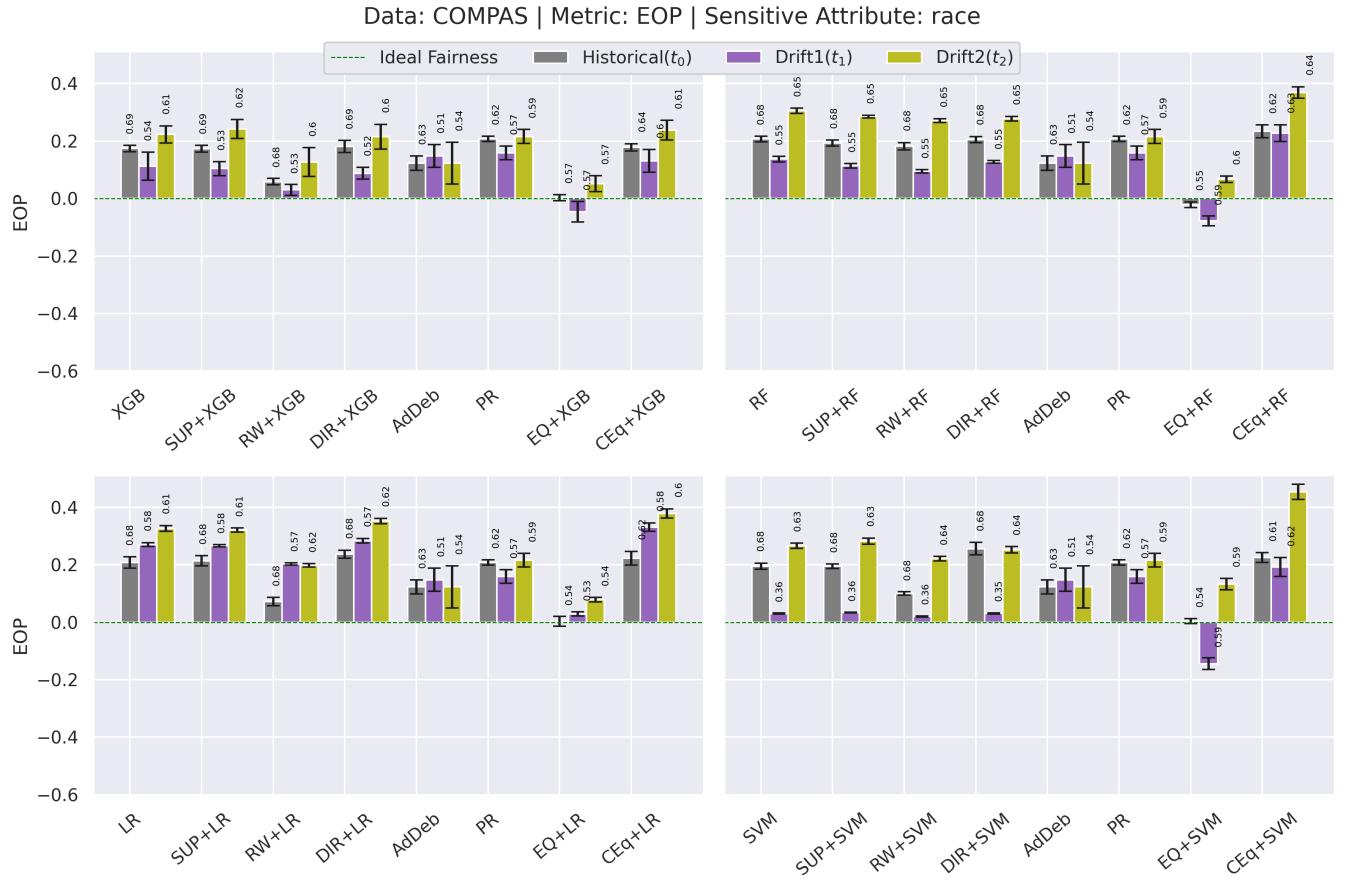


Figure 7: EOP for COMPAS dataset.



Figure 8: ERD for COMPAS dataset.

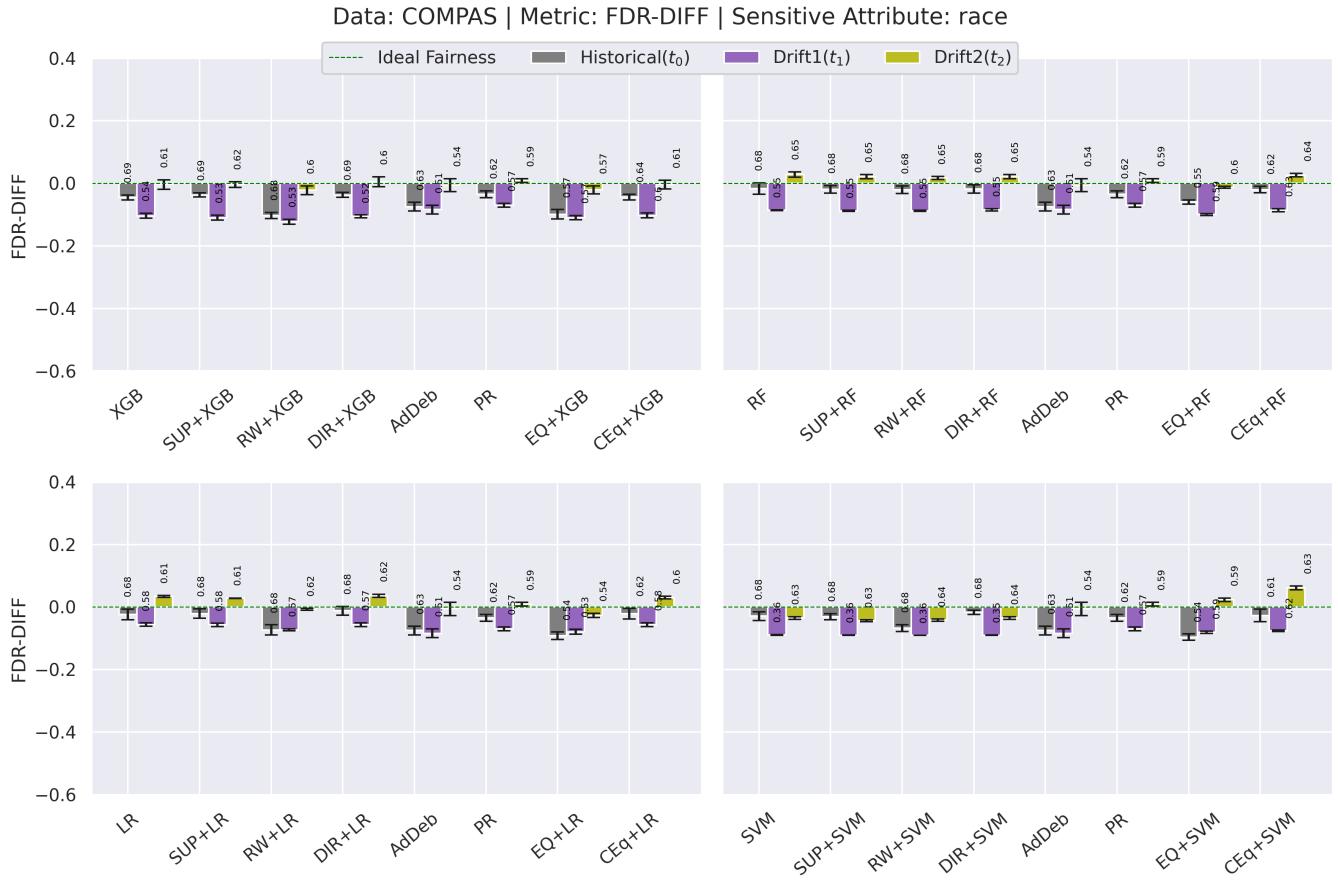


Figure 9: FDR-DIFF for COMPAS dataset.

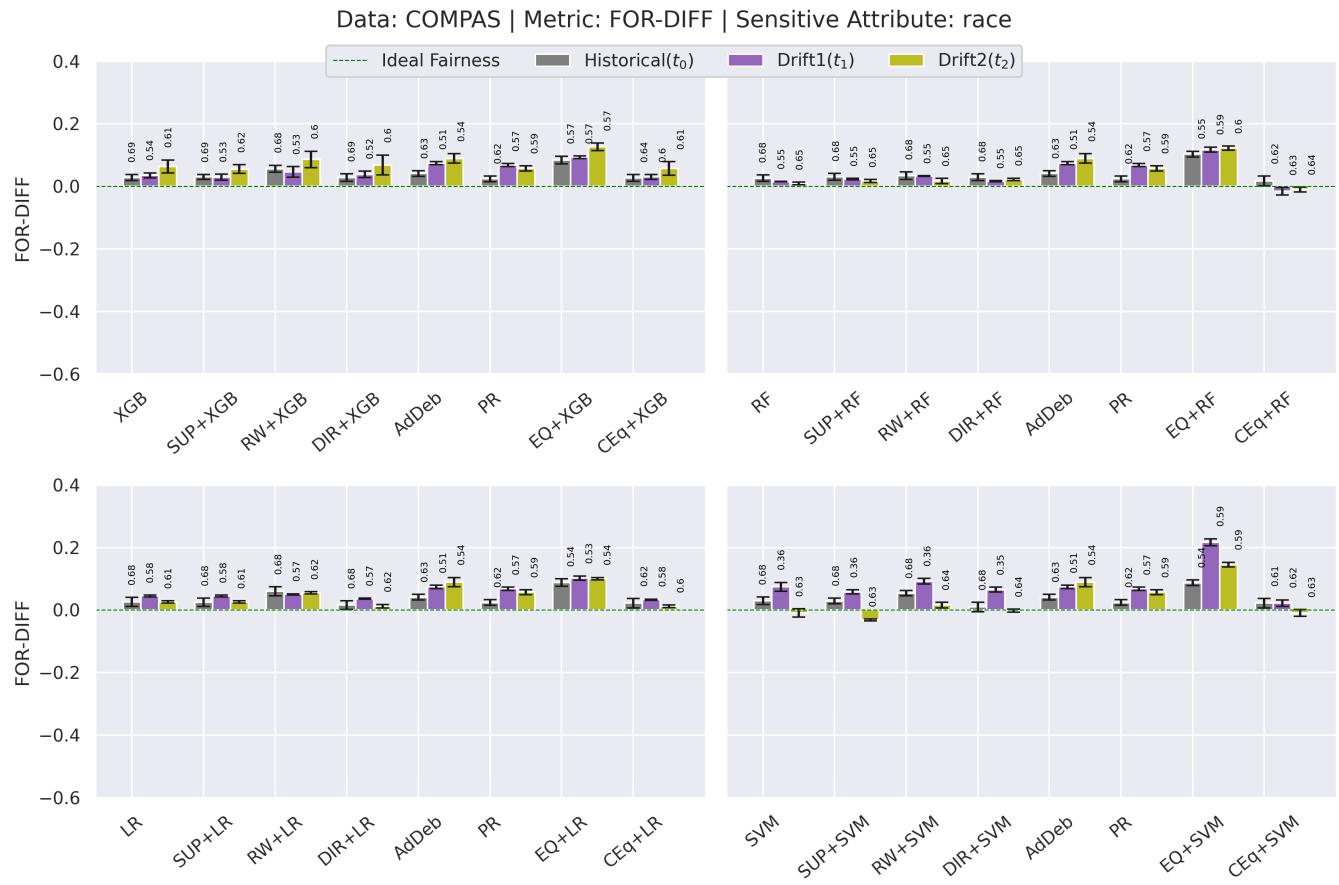
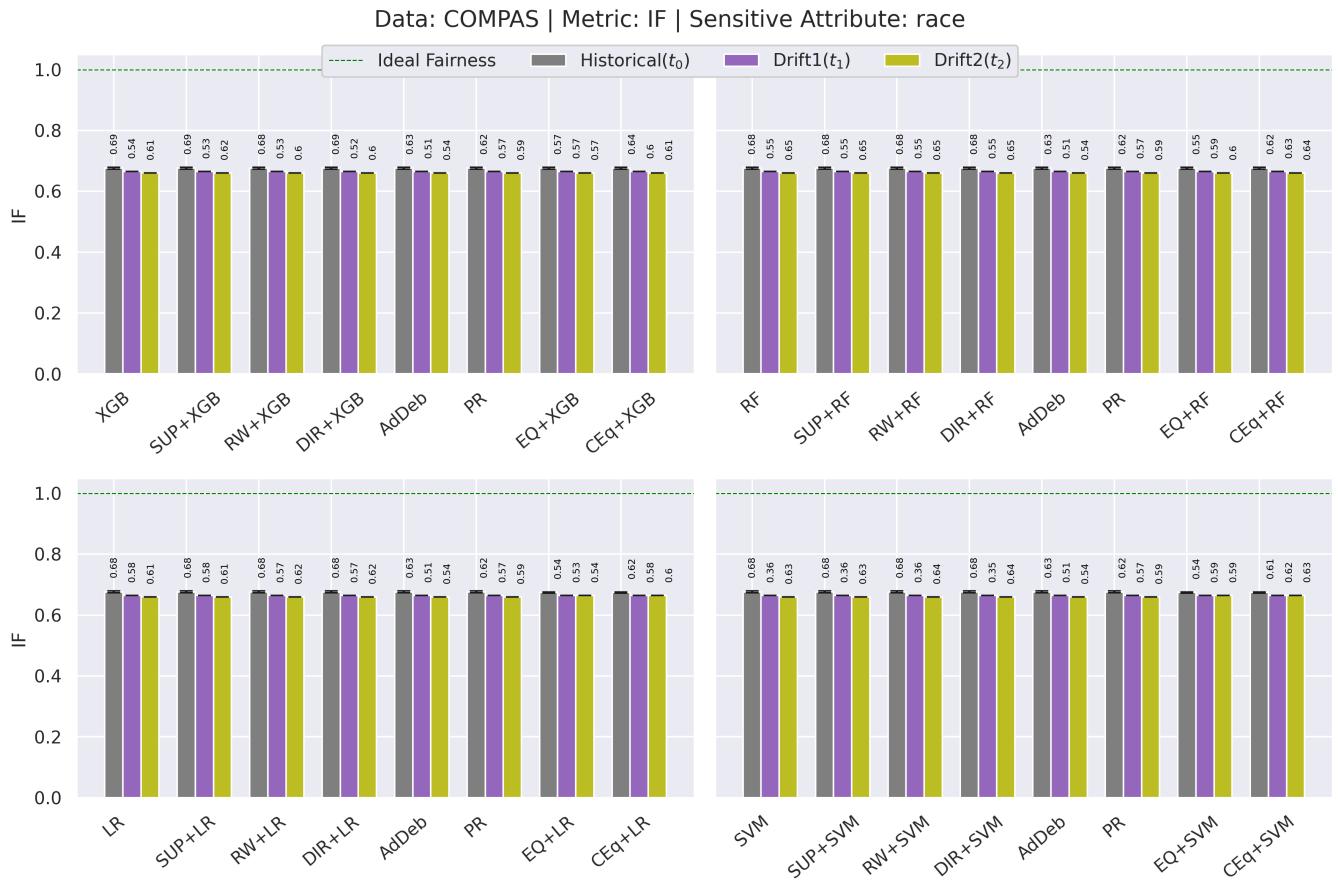
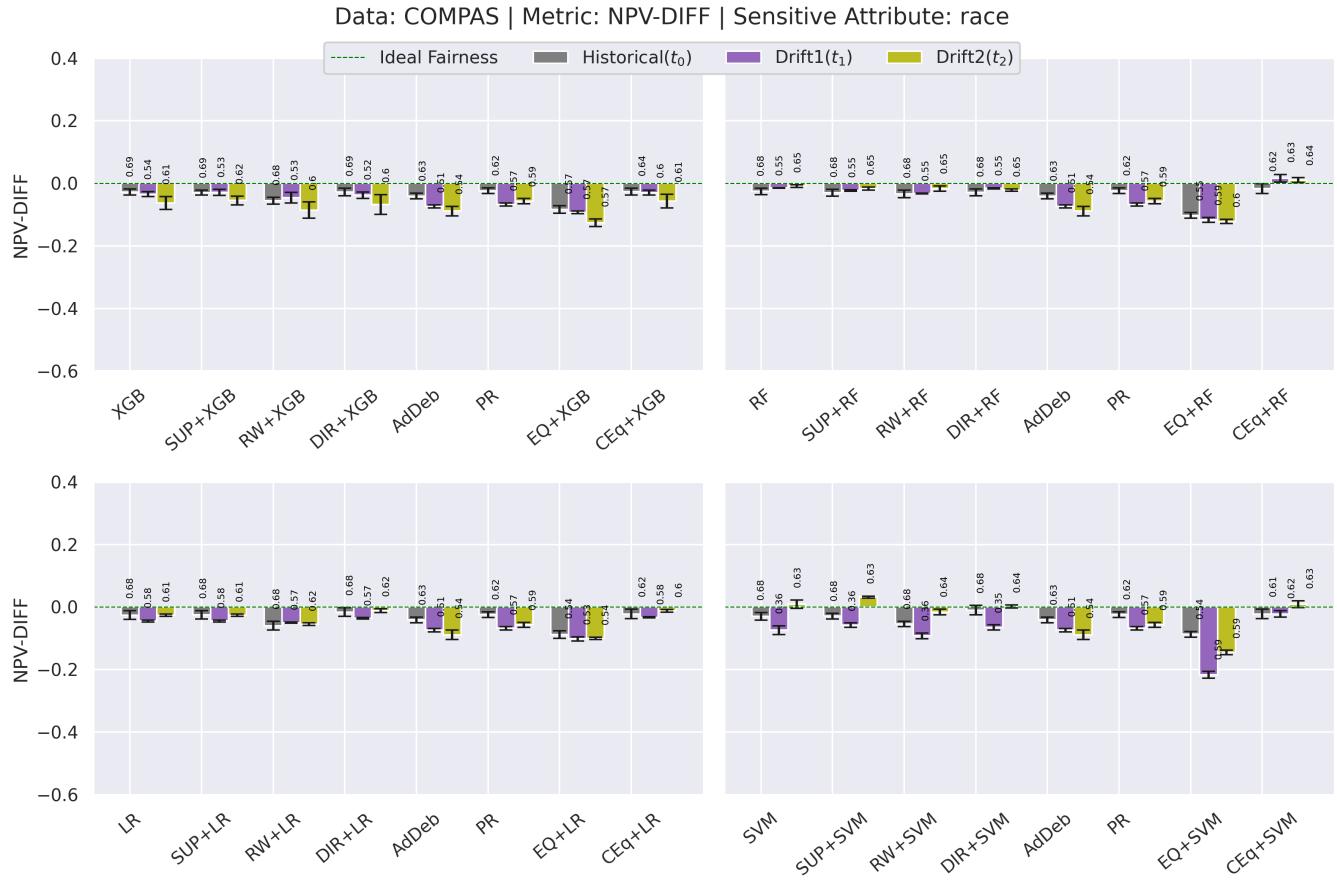


Figure 10: FOR-DIFF for COMPAS dataset.

**Figure 11: Consistency for COMPAS dataset.**

**Figure 12: NPV-DIFF for COMPAS dataset.**

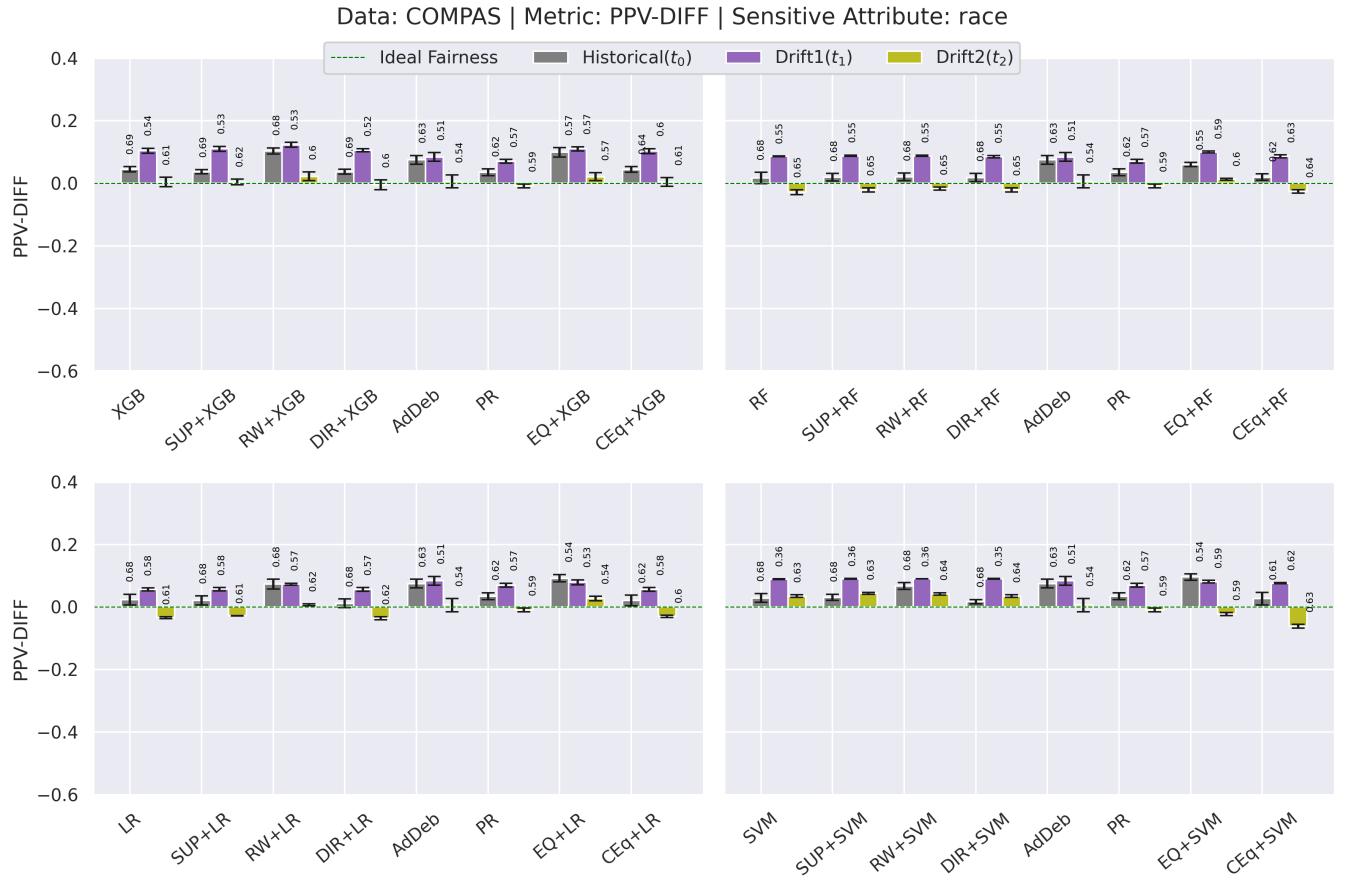


Figure 13: PPV-DIFF for COMPAS dataset.

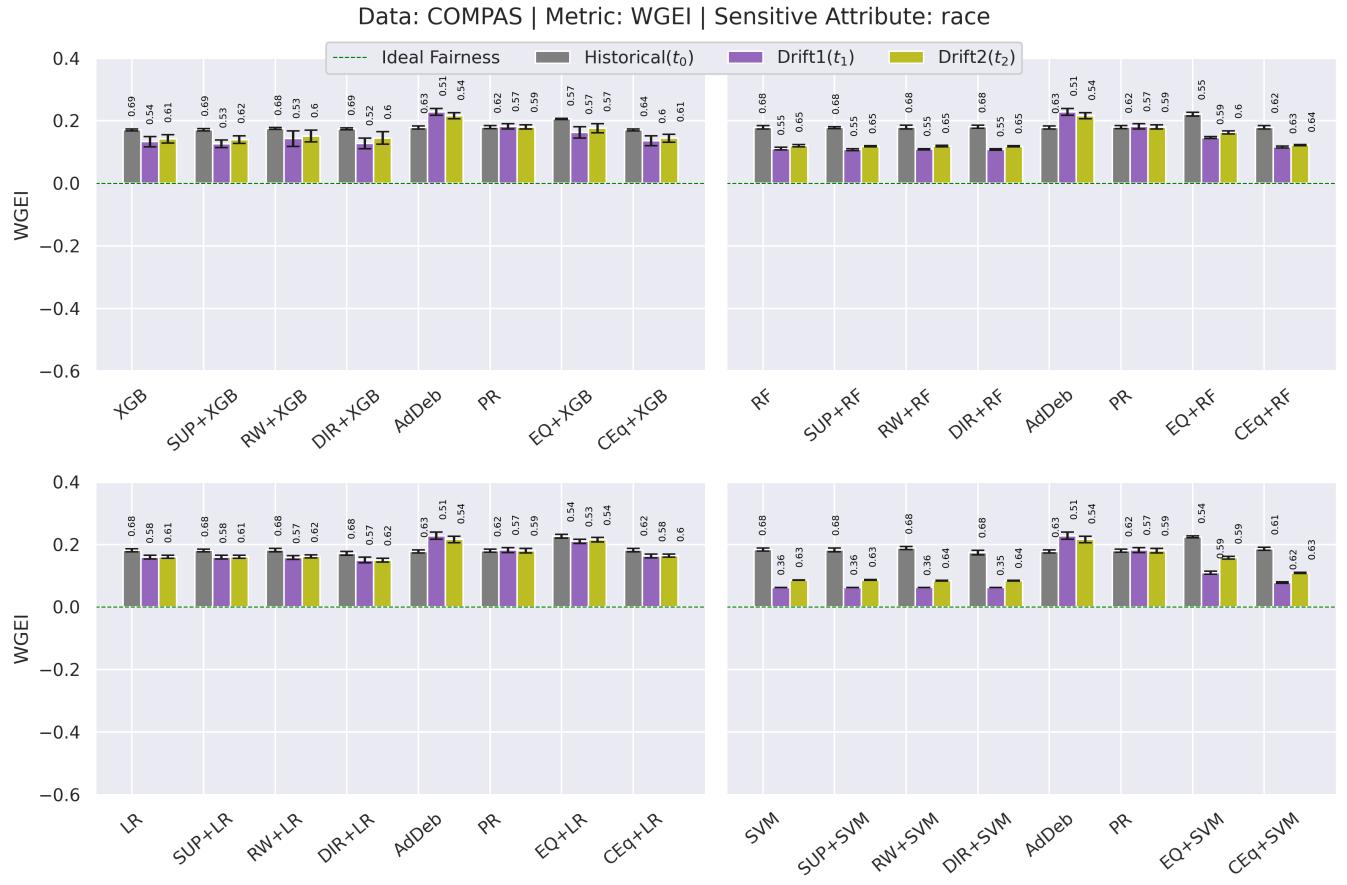


Figure 14: WGEI for COMPAS dataset.

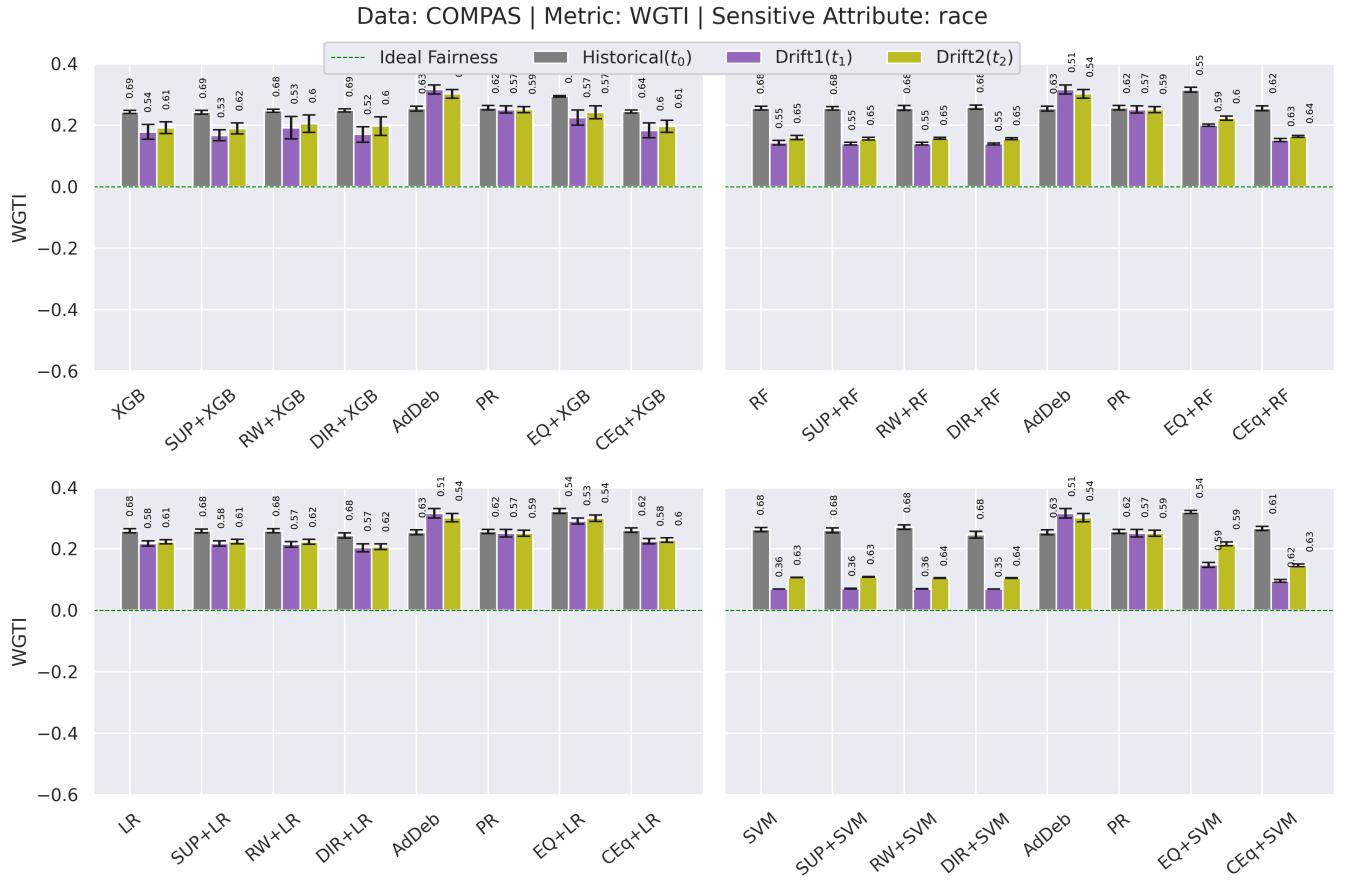
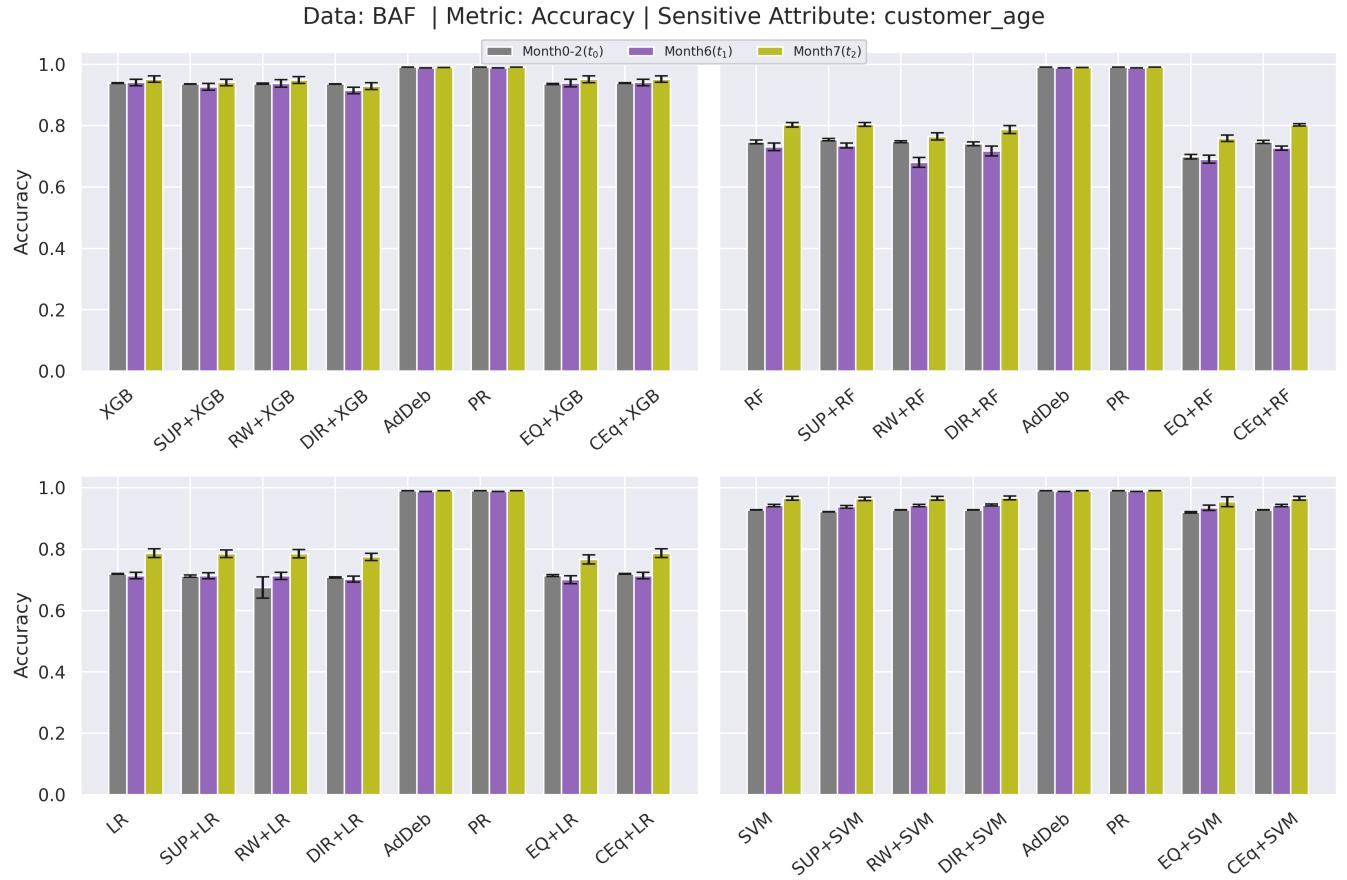


Figure 15: WGTI for COMPAS dataset.

**Figure 16: Accuracy for BAF dataset.**

Data: BAF | Metric: Bal_Accuracy | Sensitive Attribute: customer_age

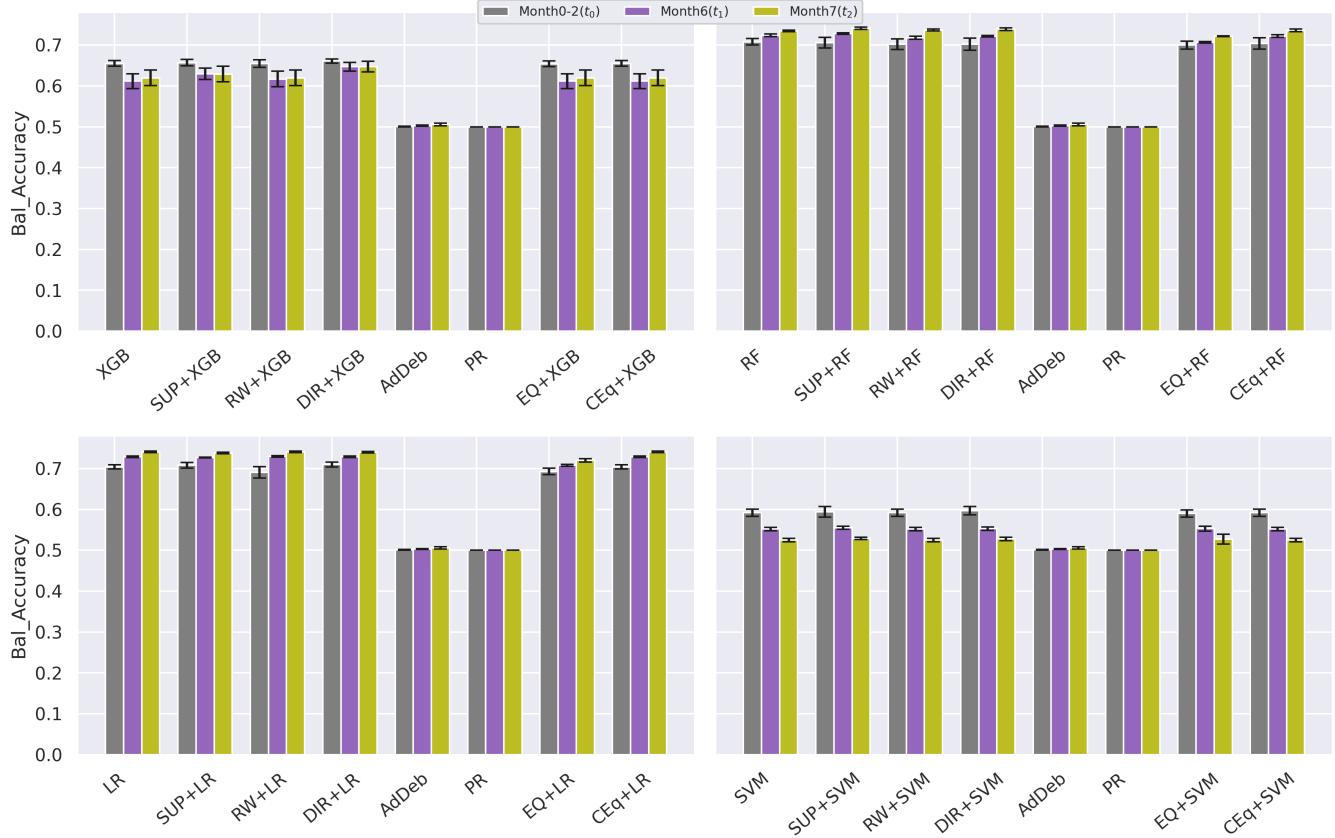


Figure 17: Balanced Accuracy for BAF dataset.

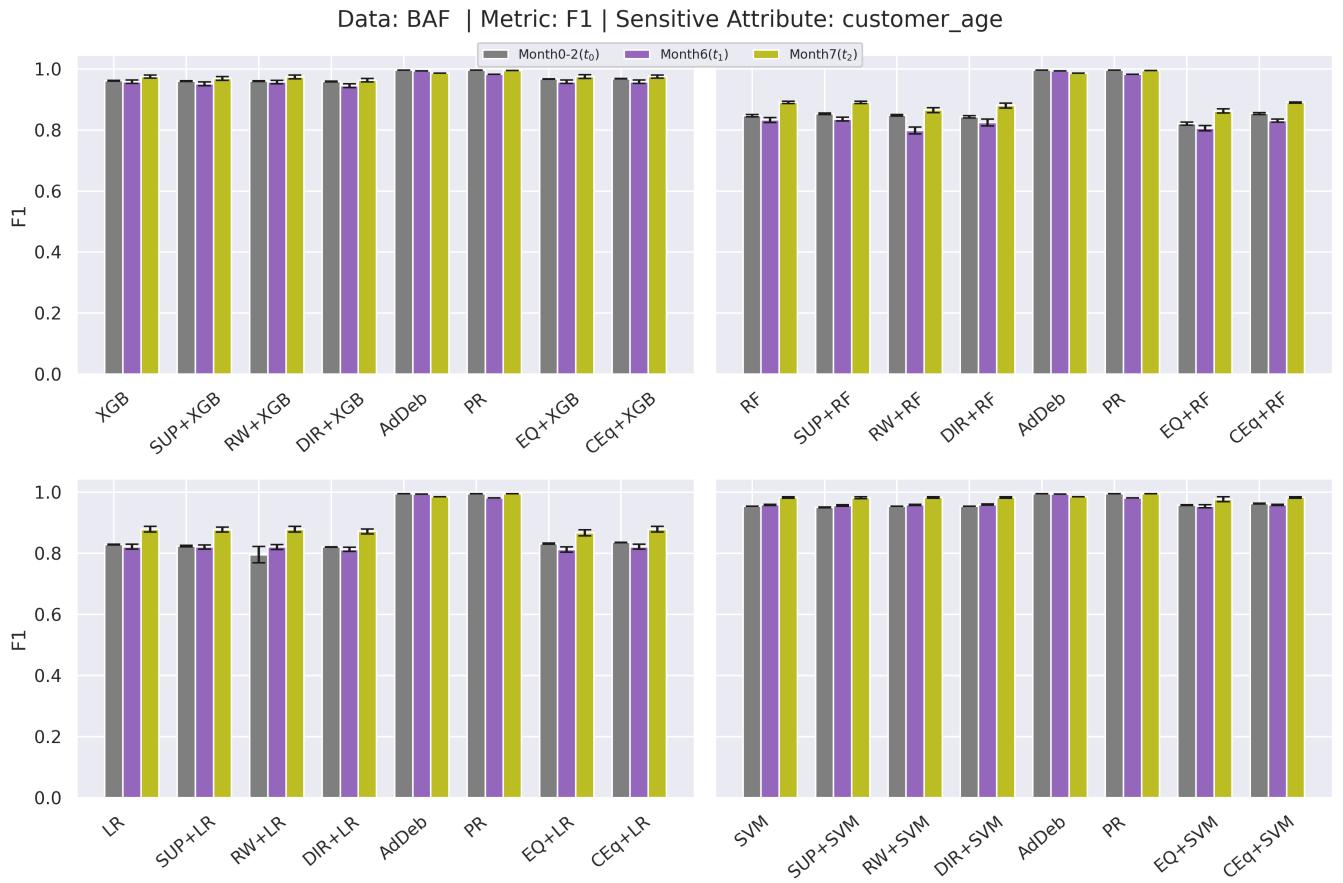


Figure 18: F1 for BAF dataset.

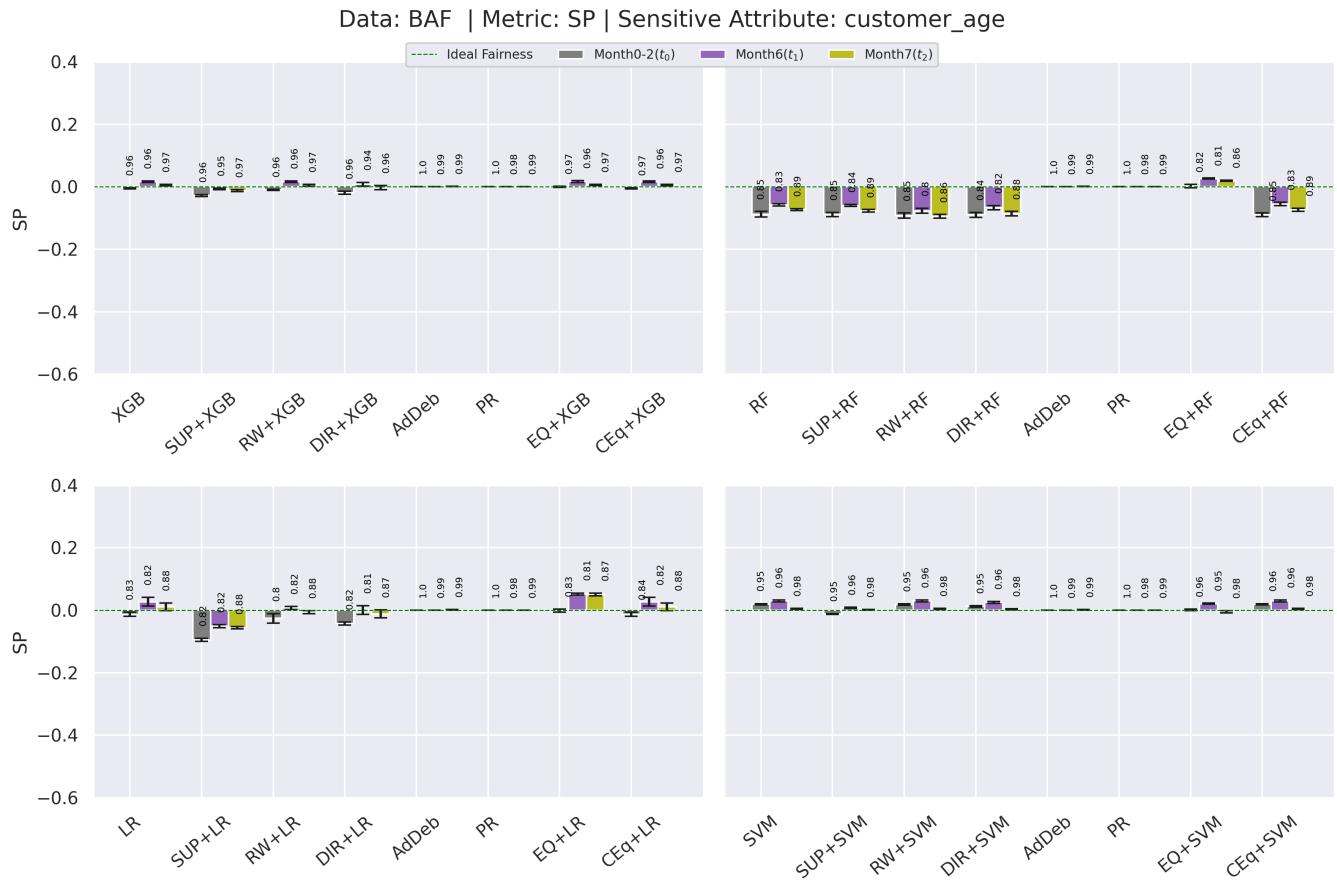
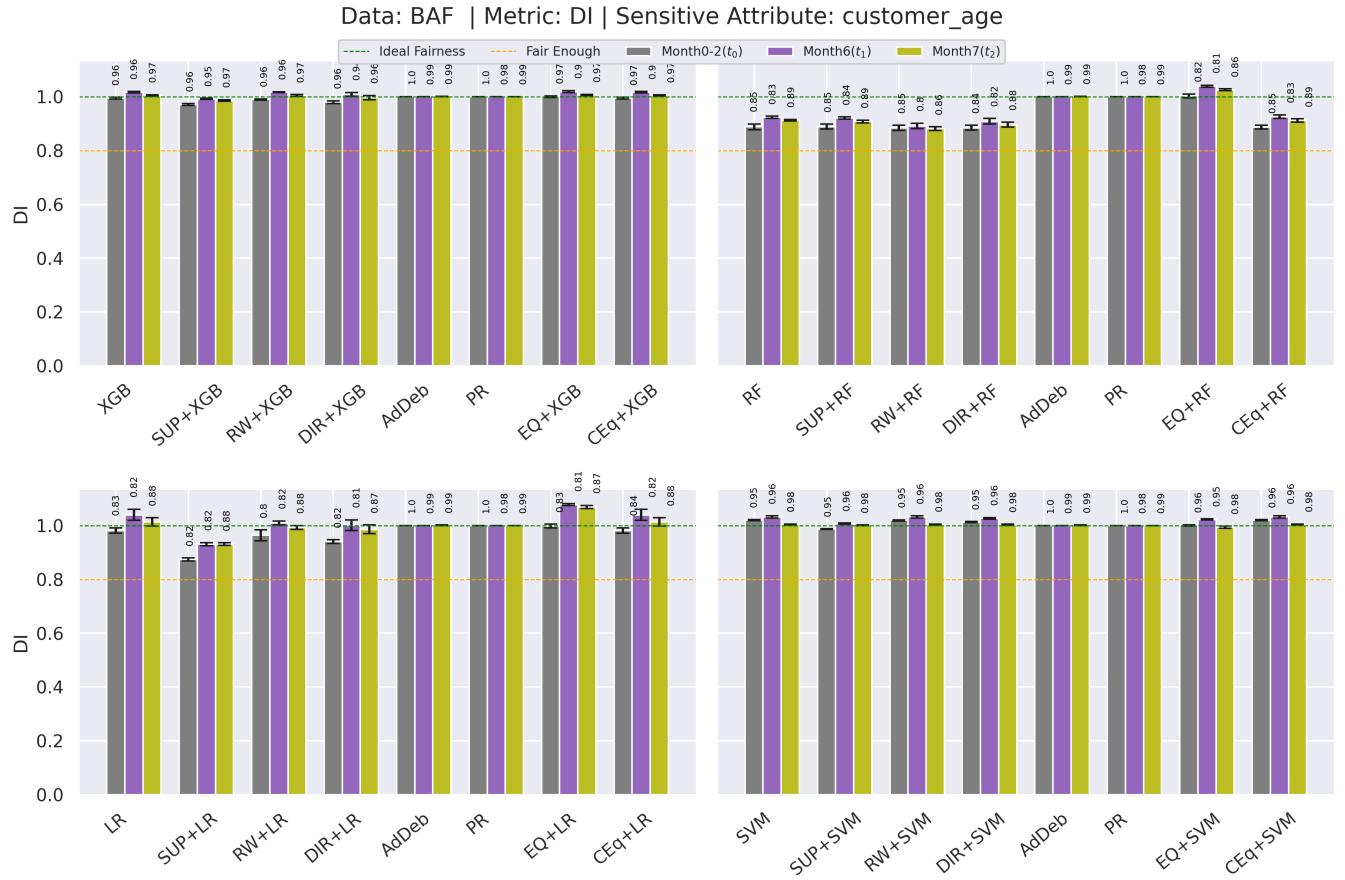


Figure 19: SP for BAF dataset.

**Figure 20: DI for BAF dataset.**

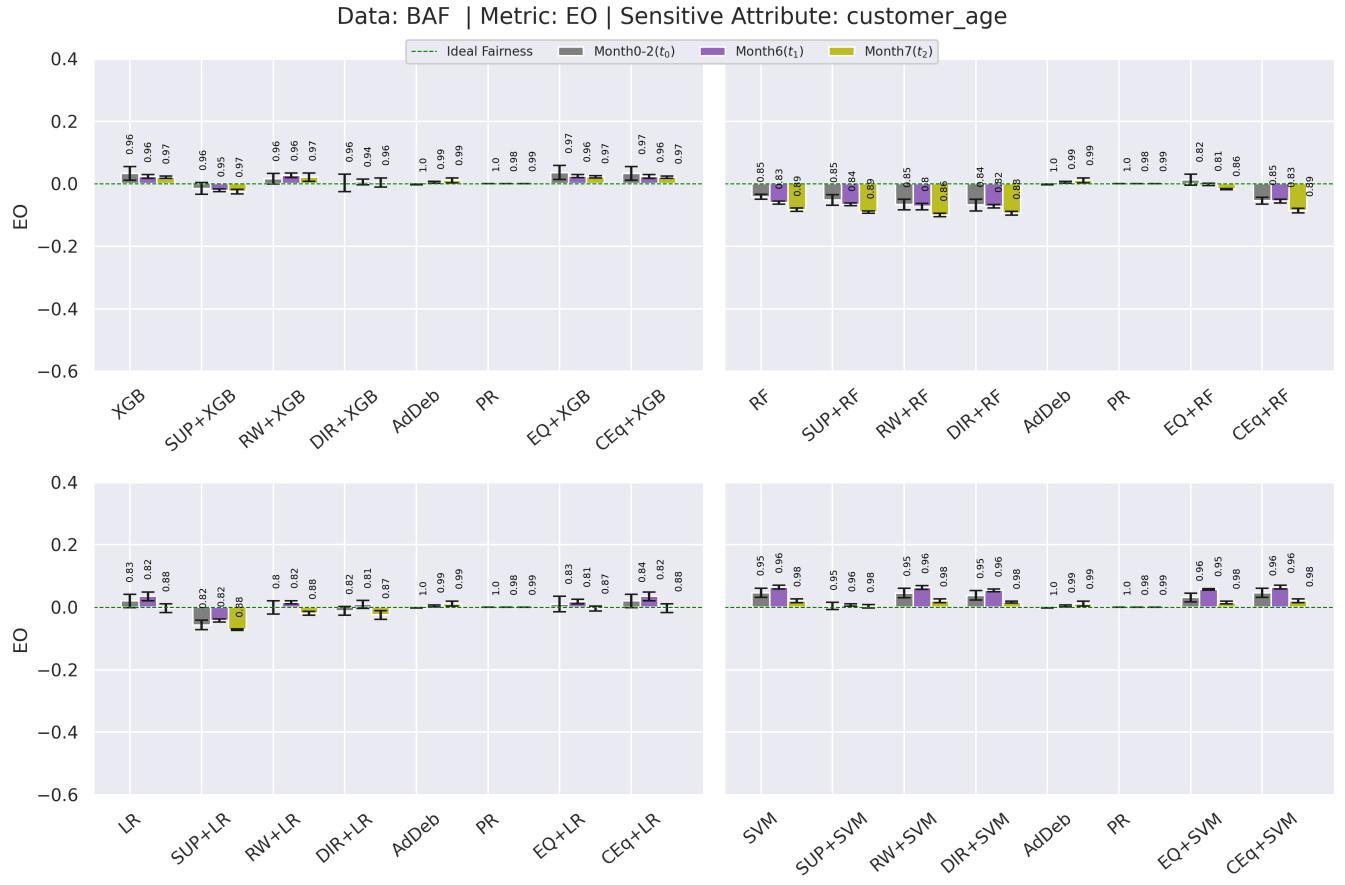


Figure 21: EO for BAF dataset.

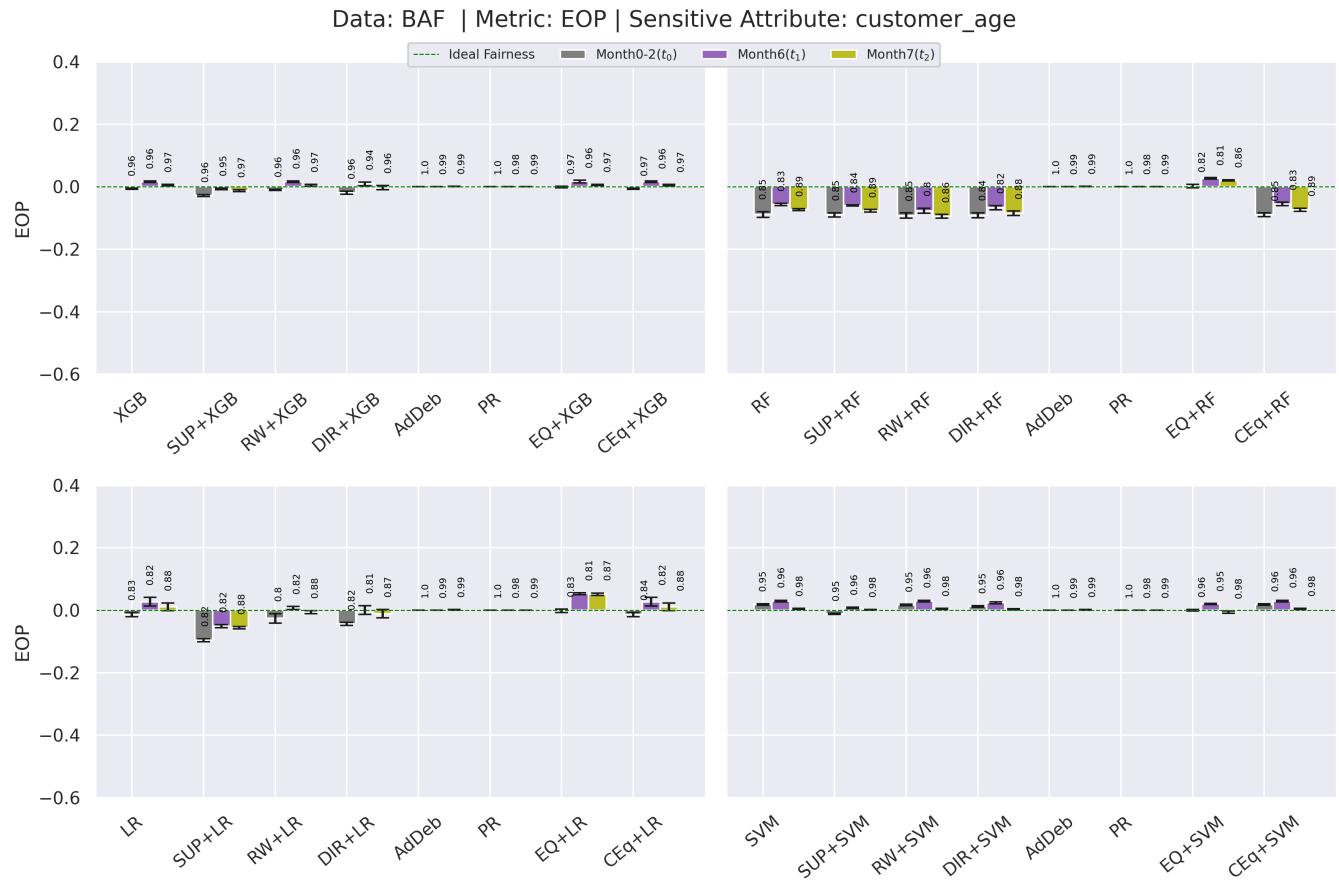


Figure 22: EOP for BAF dataset.

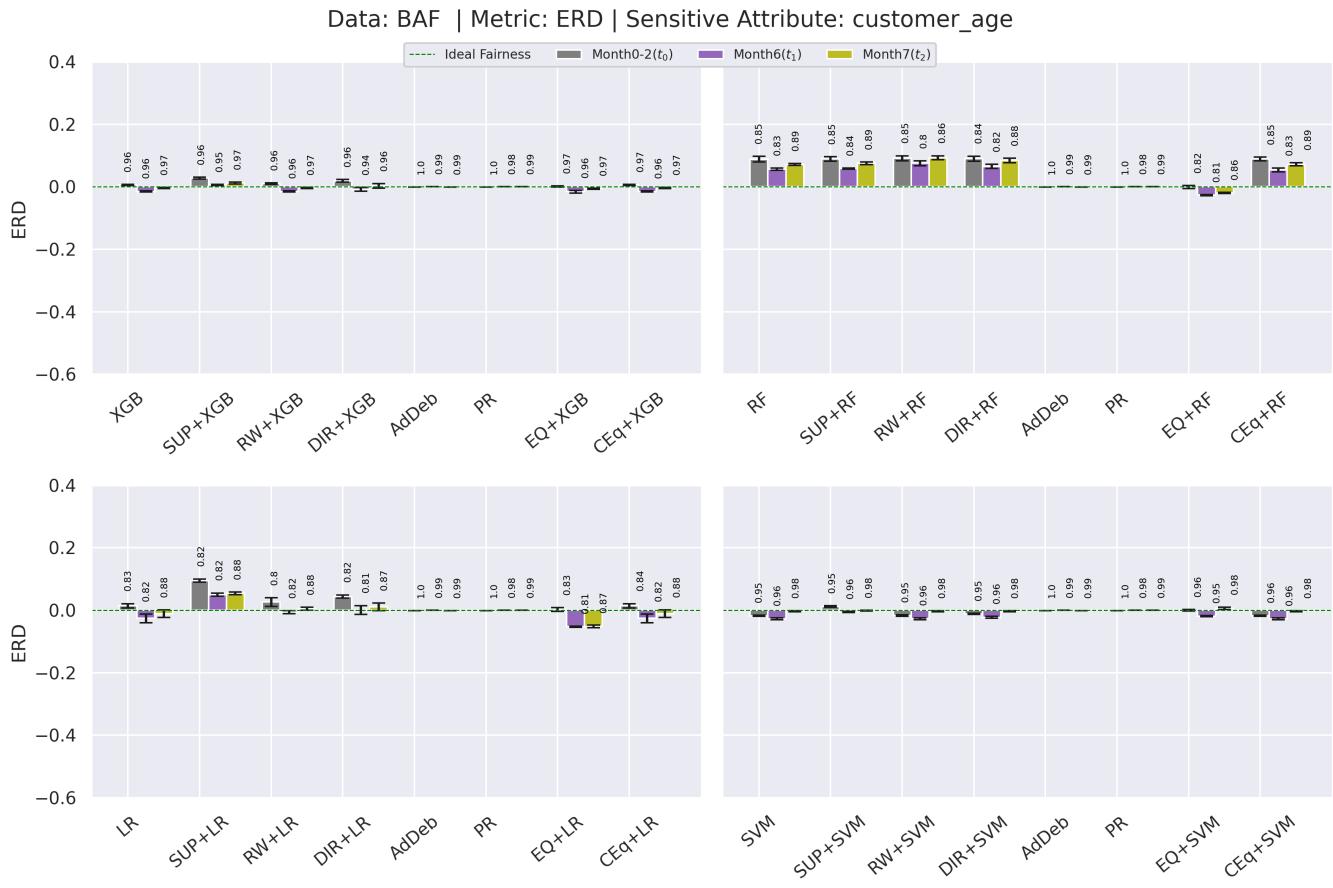


Figure 23: ERD for BAF dataset.

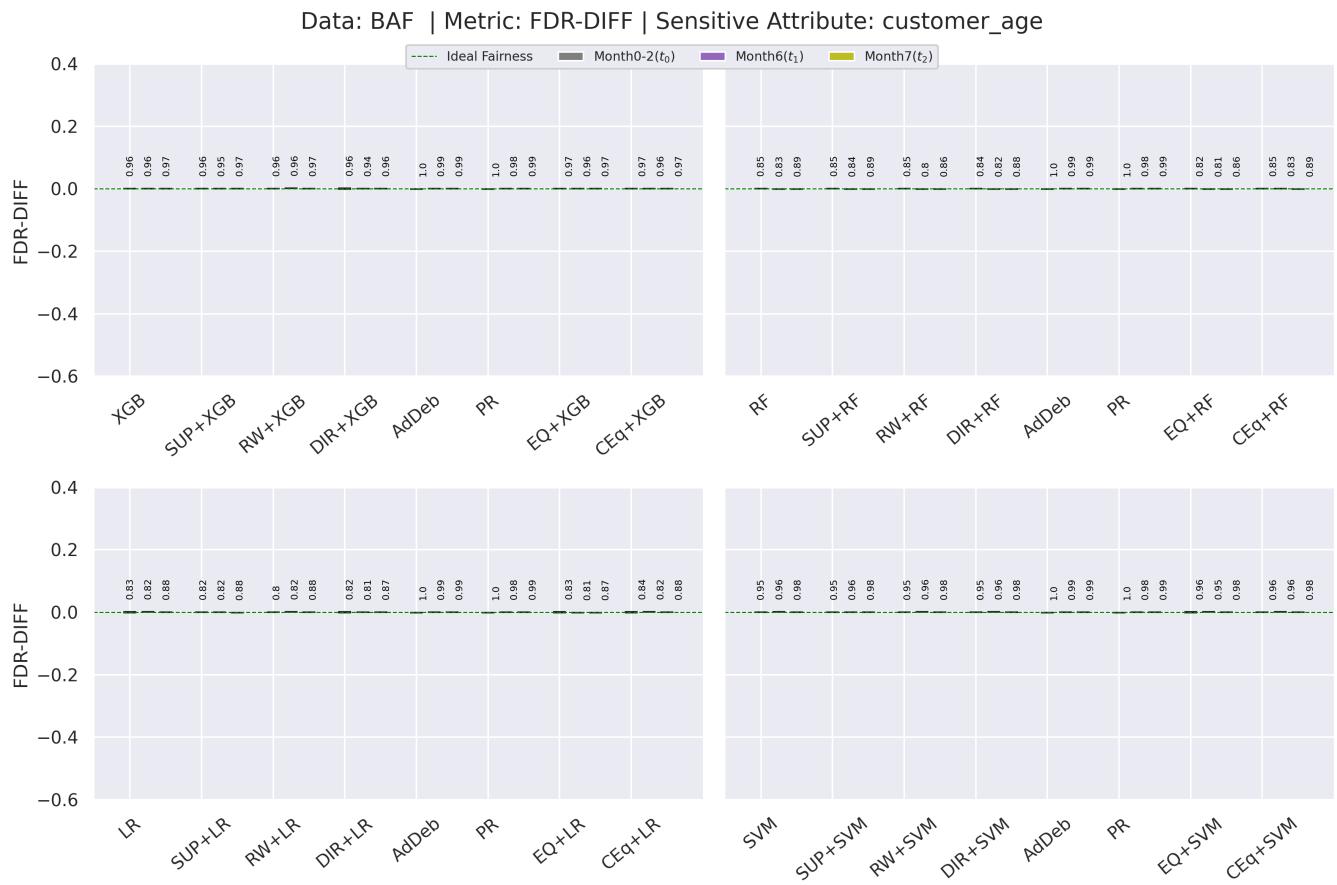


Figure 24: FDR-DIFF for BAF dataset.

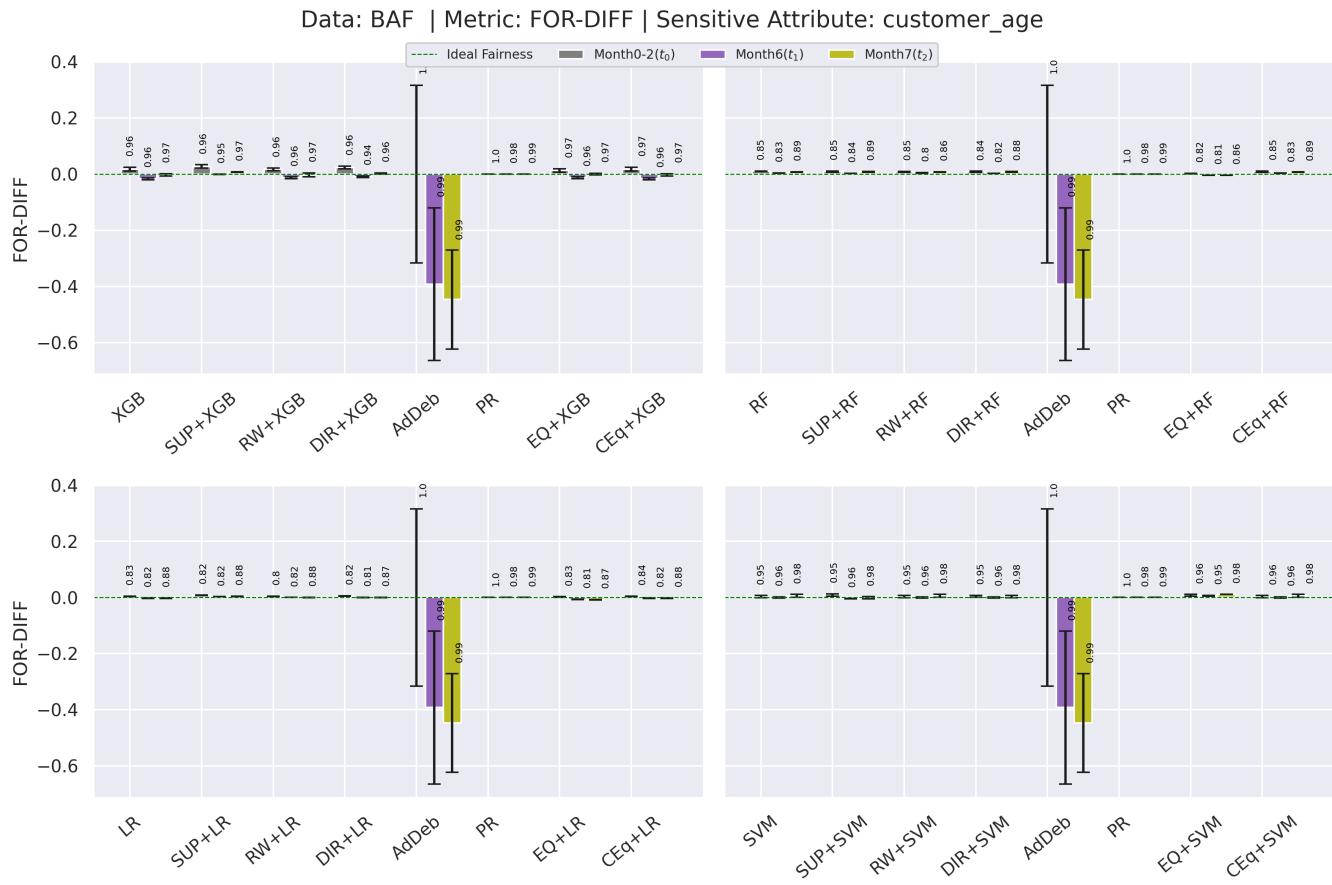


Figure 25: FOR-DIFF for BAF dataset.

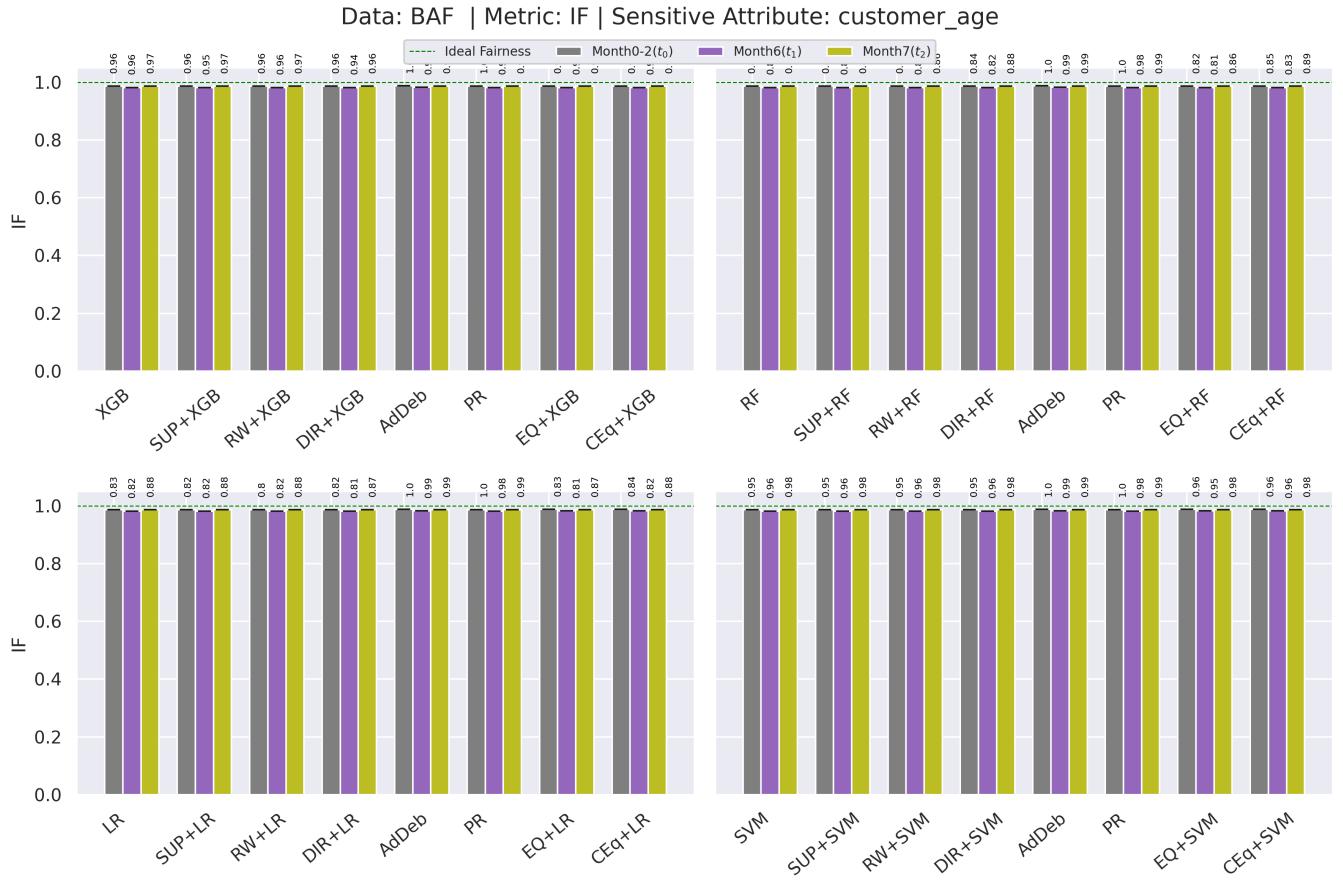


Figure 26: Consistency for BAF dataset.

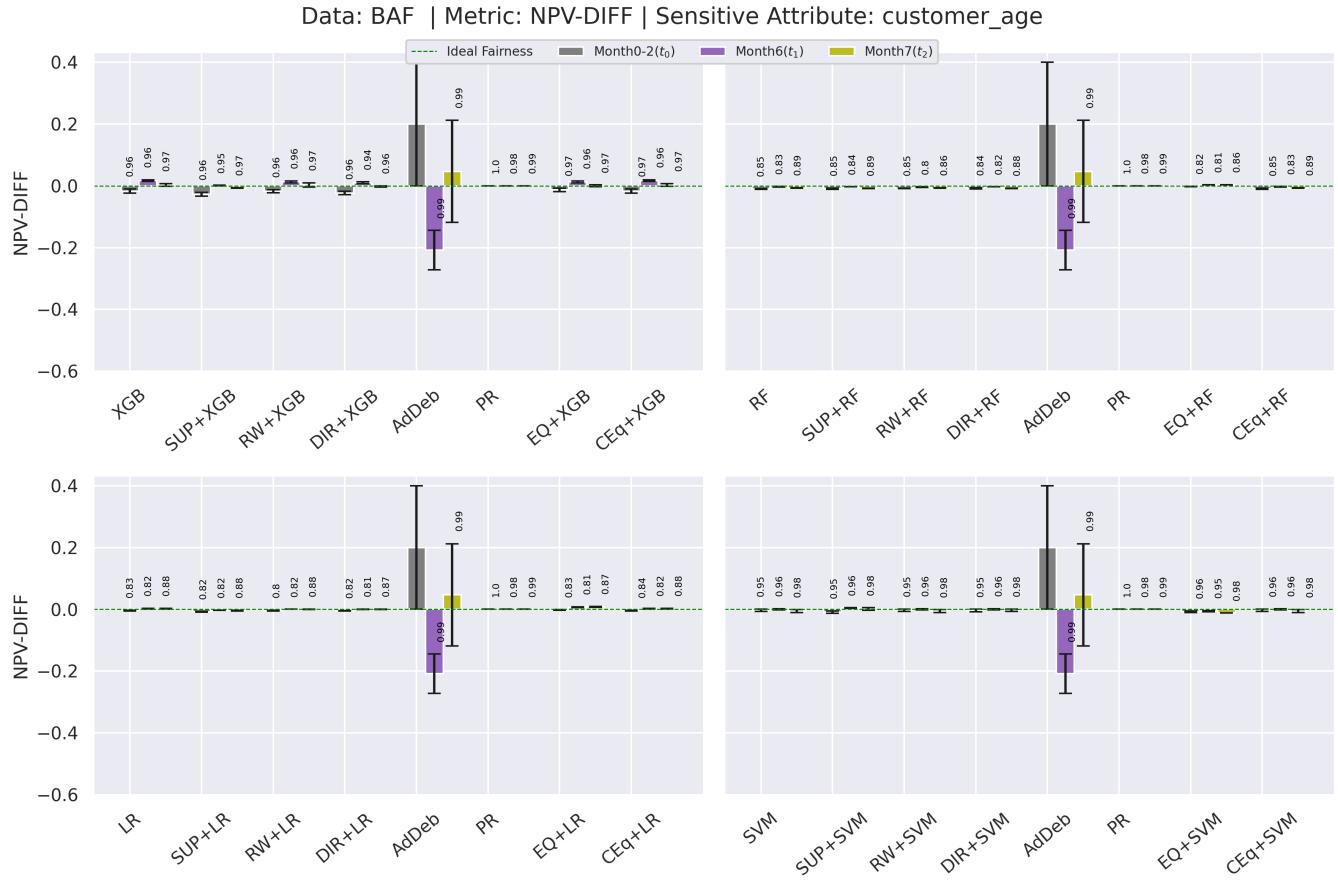


Figure 27: NPV-DIFF for BAF dataset.

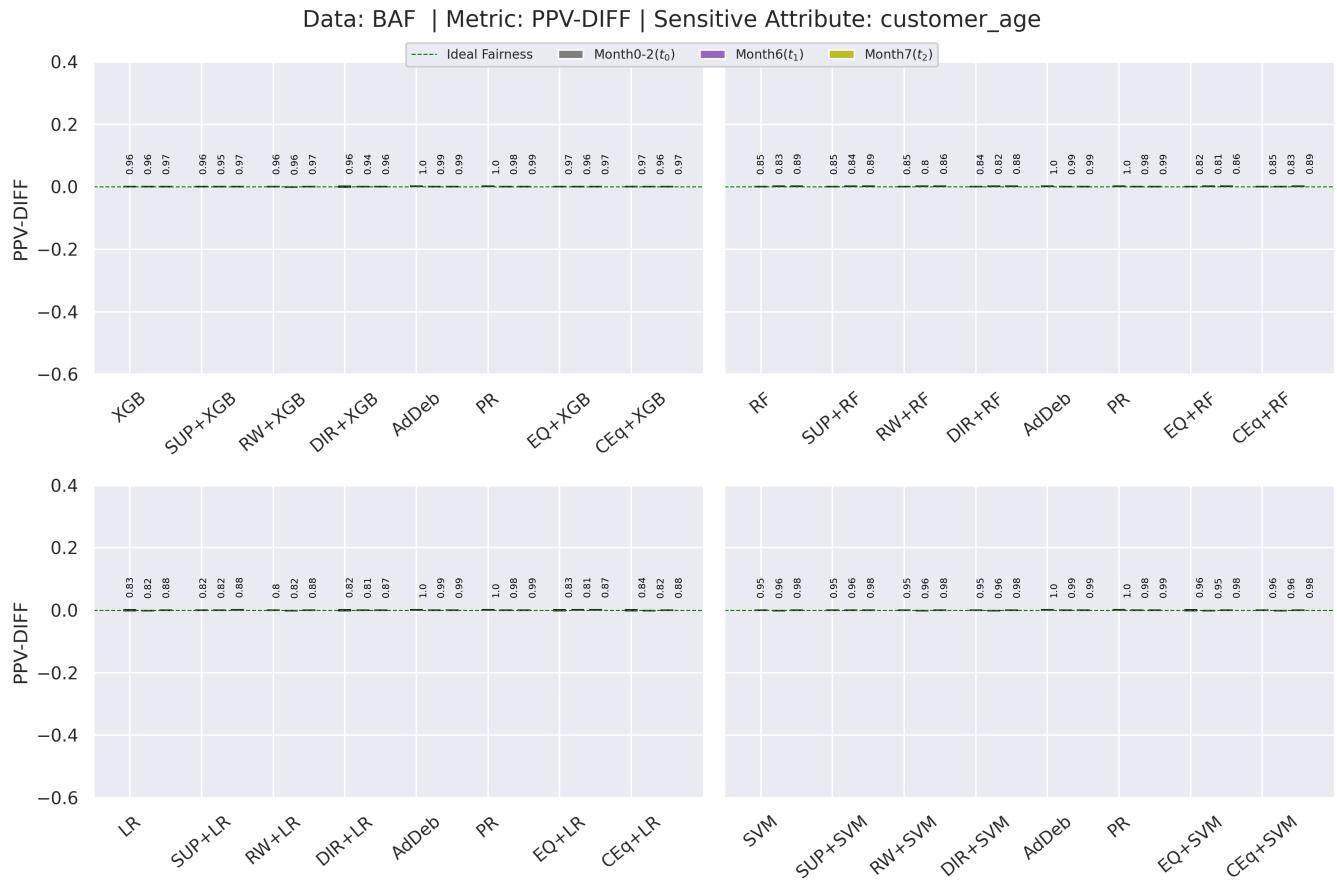


Figure 28: PPV-DIFF for BAF dataset.

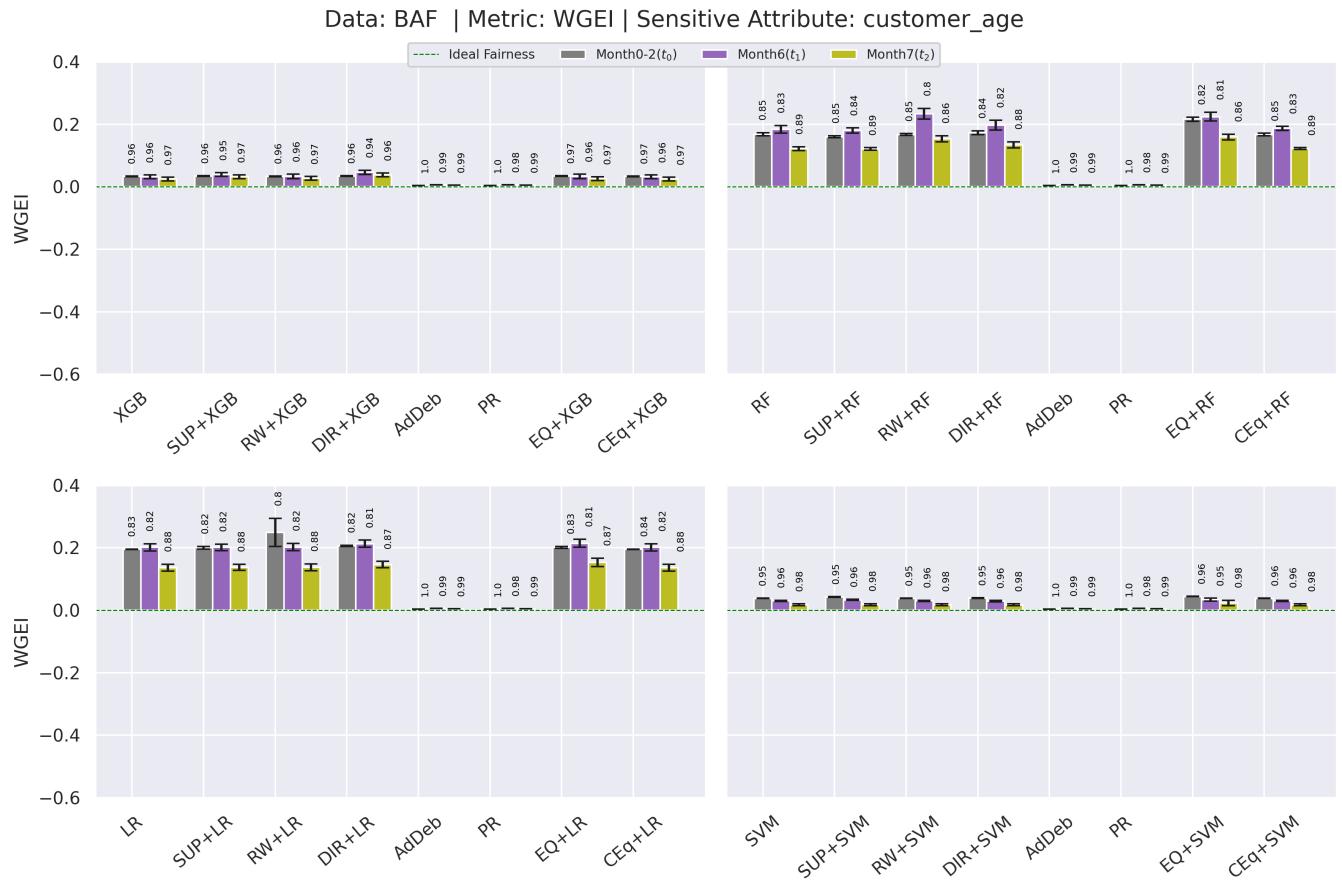


Figure 29: WGEI for BAF dataset.

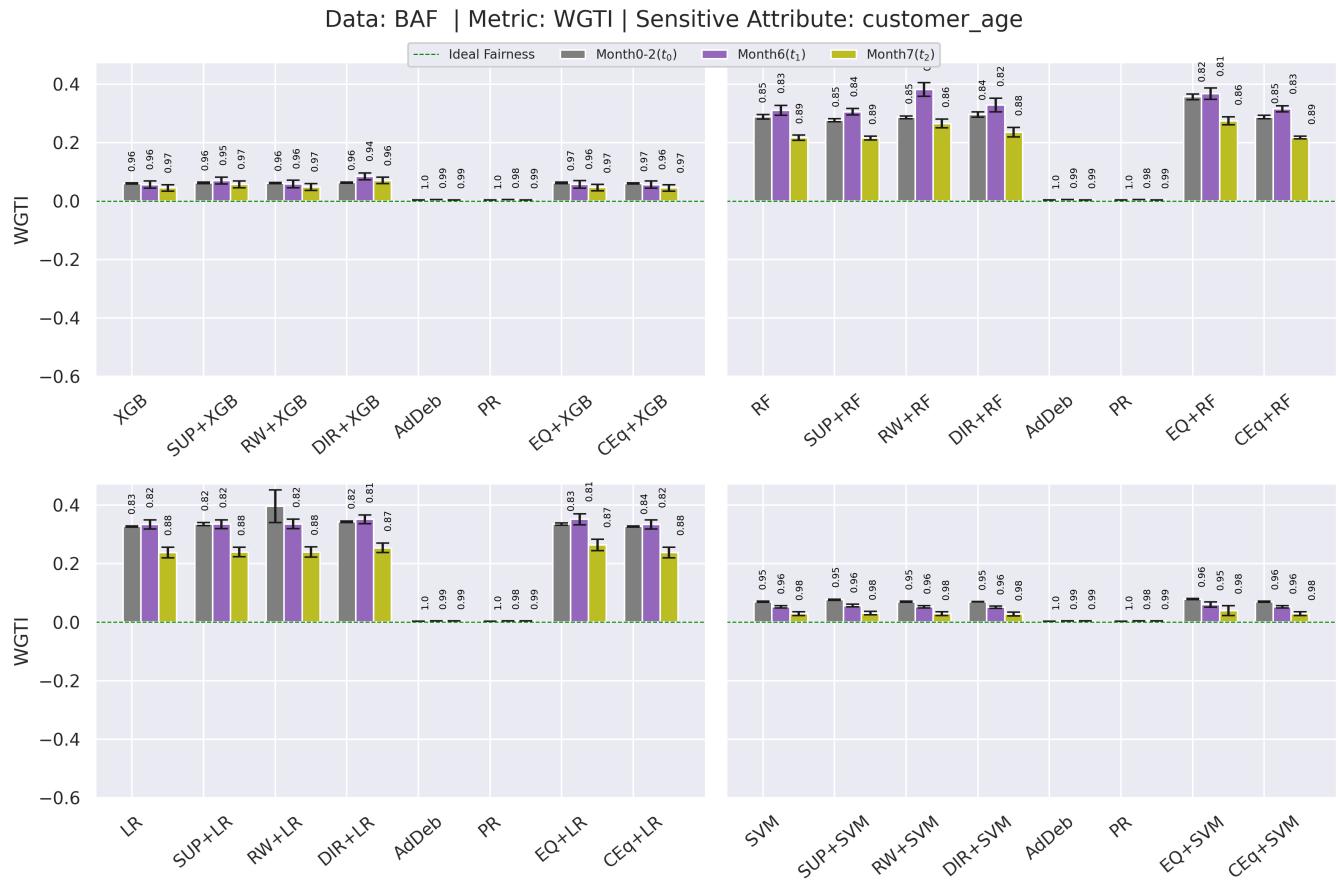


Figure 30: WGTI for BAF dataset.