Algorithmic Bias

On GC Dataset: SHAP plots

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SHAP plots: Oversampling treatment X Classifier

- In the table right, you can see the type of oversampler and classifier.
- SHAP summary plot and group difference plot will be shown, as well as the expected value.

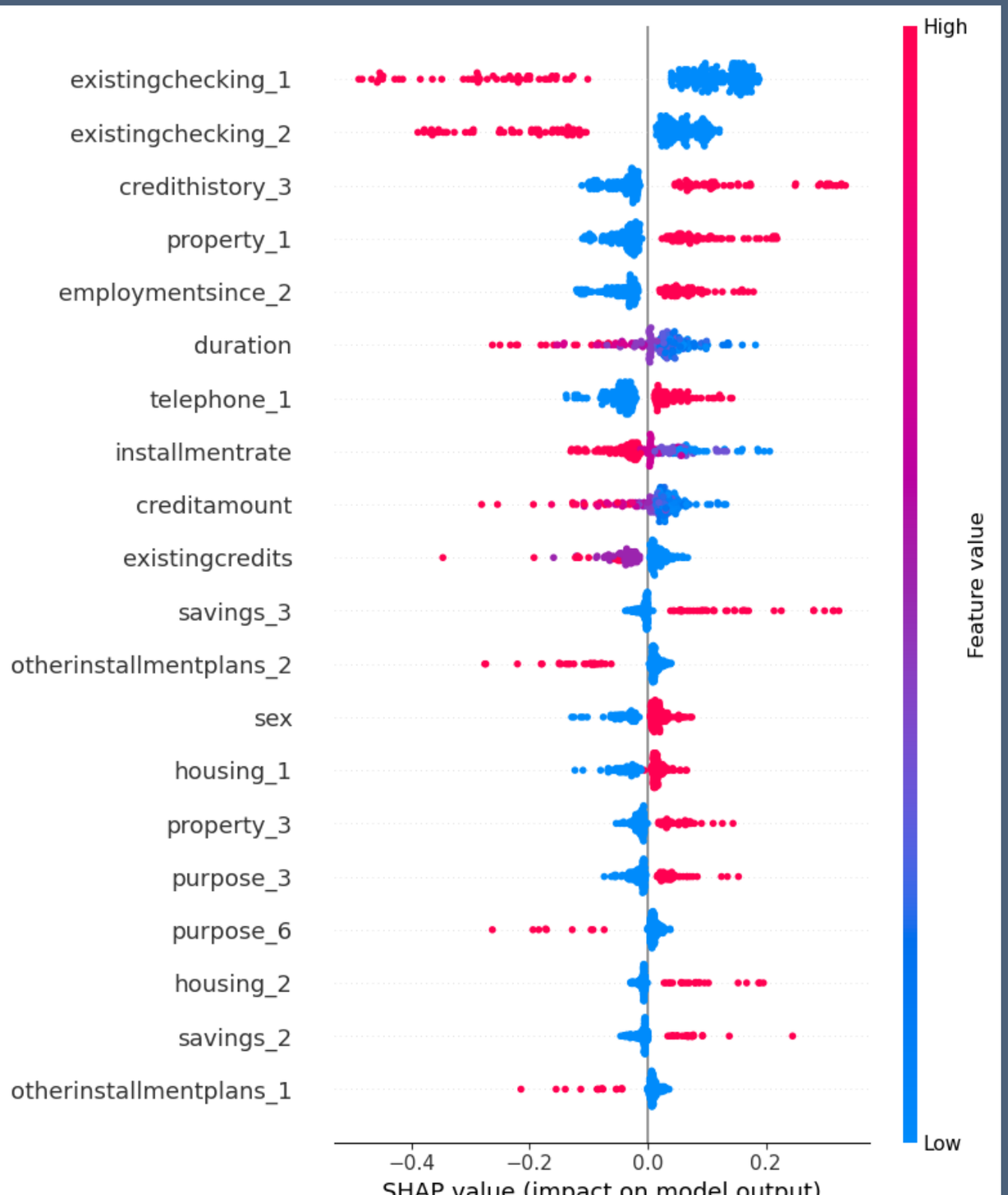
No	Oversampler	Classifier
1	No oversampling	LR
2		SVM
3		RF
4		MLP
5	RandomOverSampler	LR
6		SVM
7		RF
8		MLP
9	SMOTE	LR
10		SVM
11		RF
12		MLP
13	Fair-SMOTE	LR
14		SVM
15		RF
16		MLP

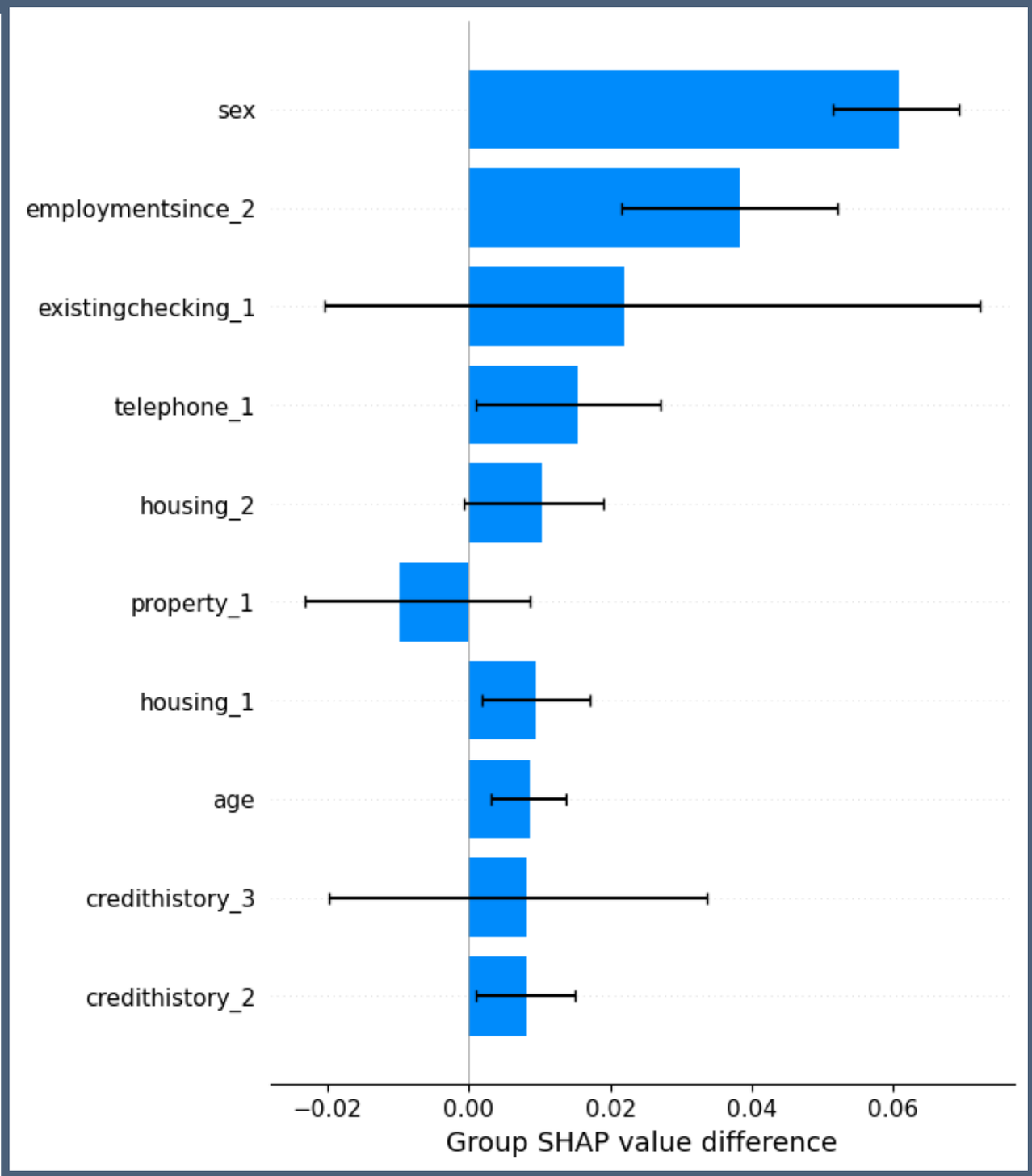
Technical details

- Please note, summary plot shows the perspective of all classes.
- The group difference plot, shown on the right, is the perspective of the advantaged class. To get the insights of the disadvantaged class, please invert the plot.

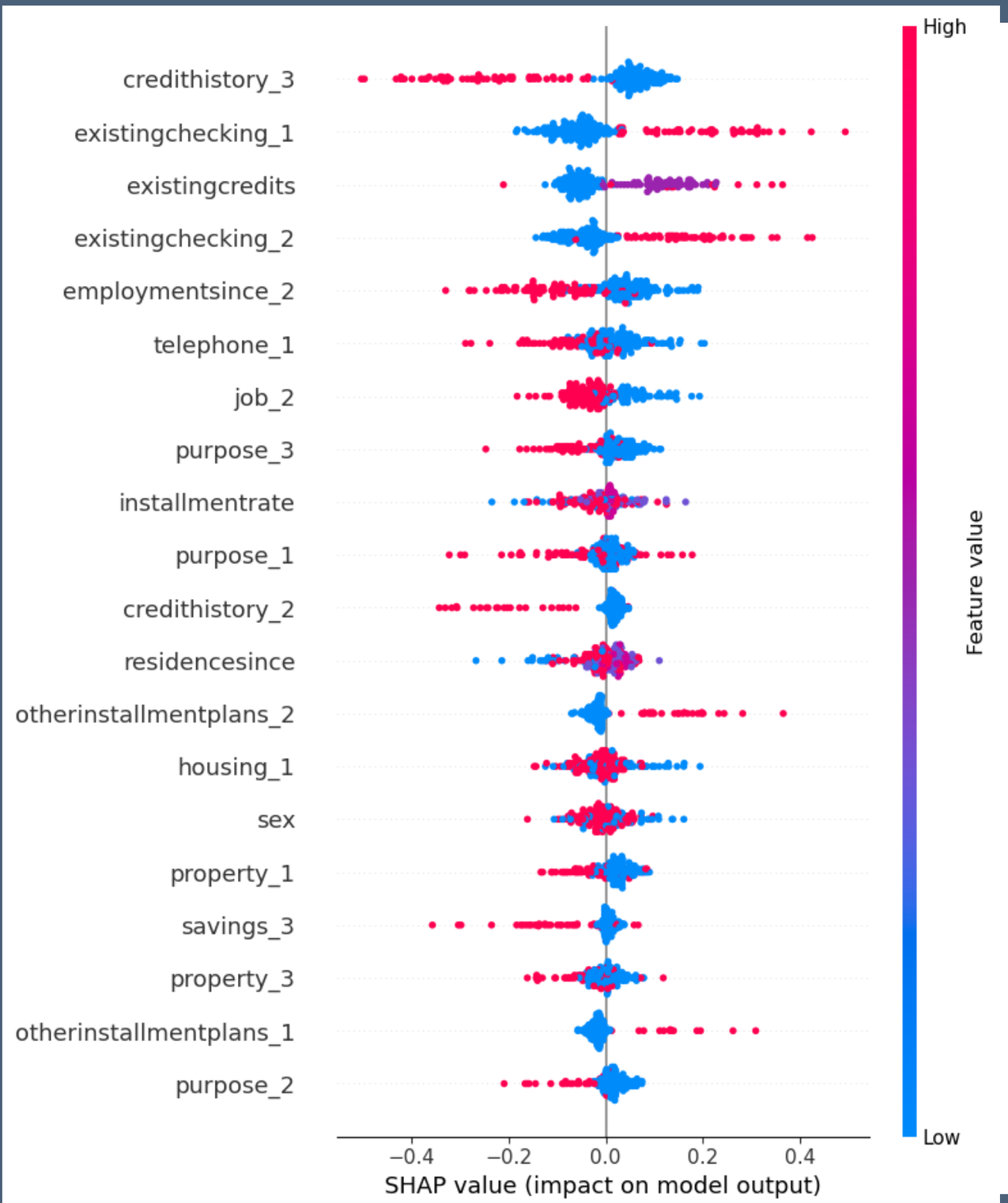
Treatment # 1 Default x LR

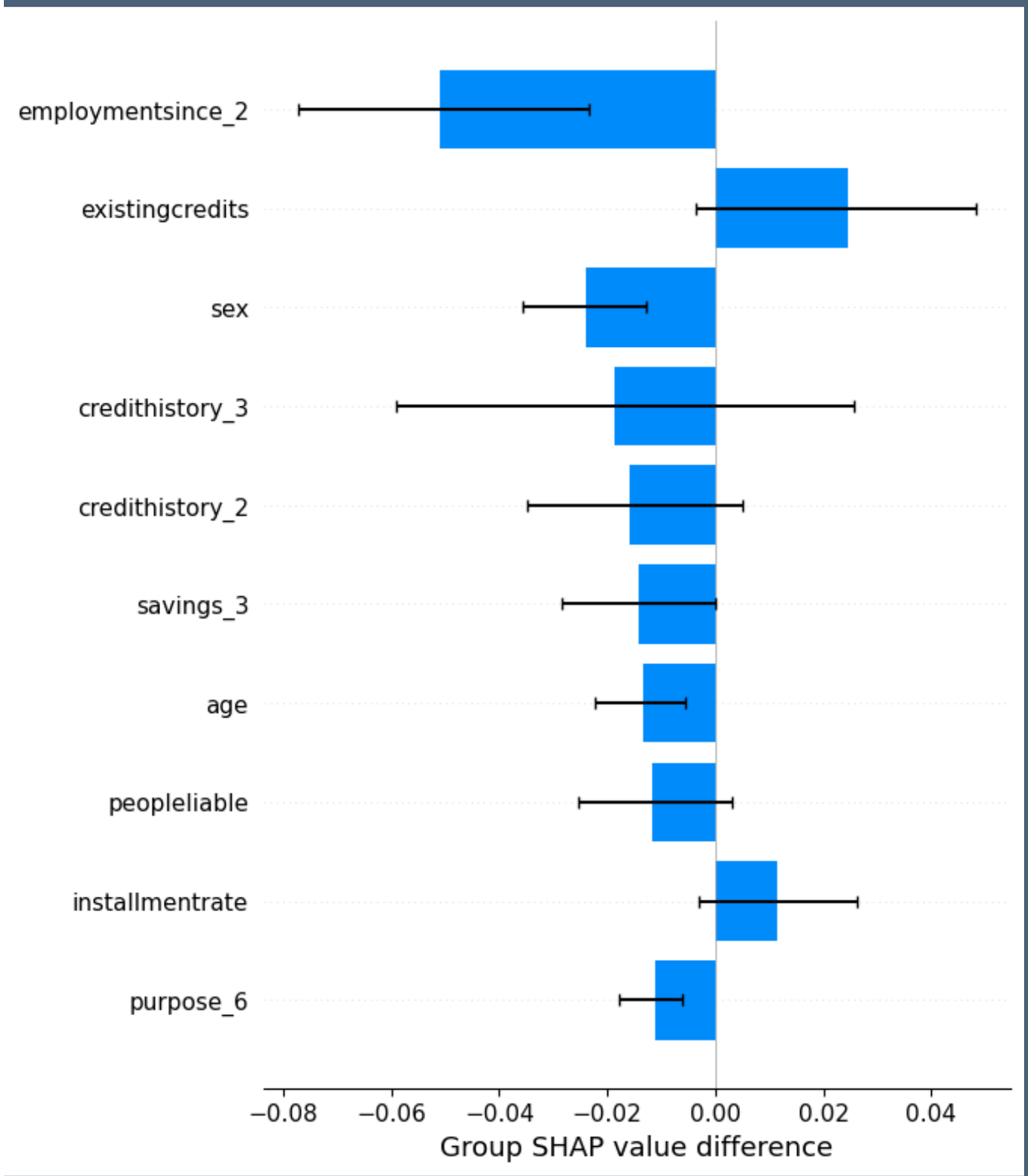
Summary plot + Group difference plot



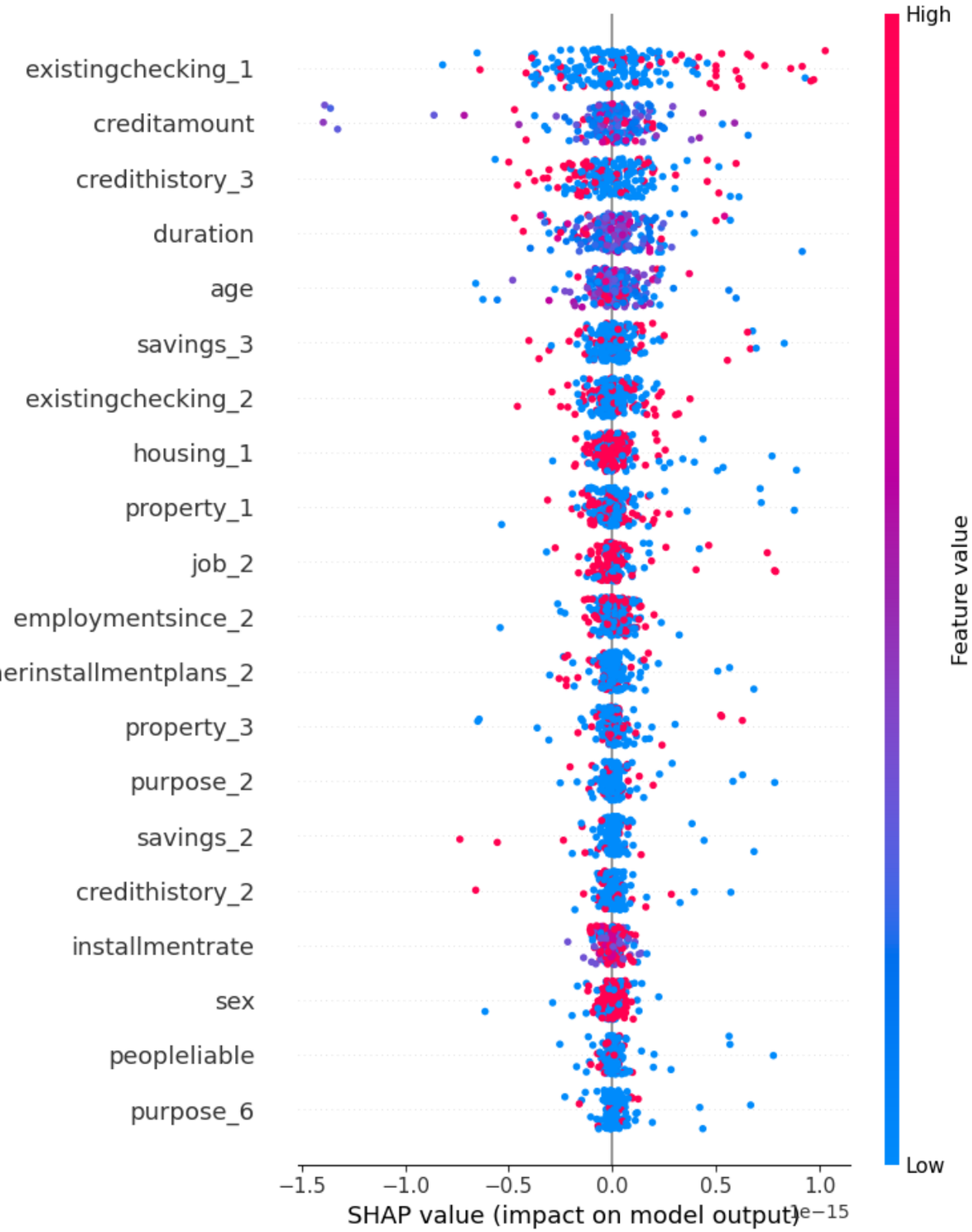


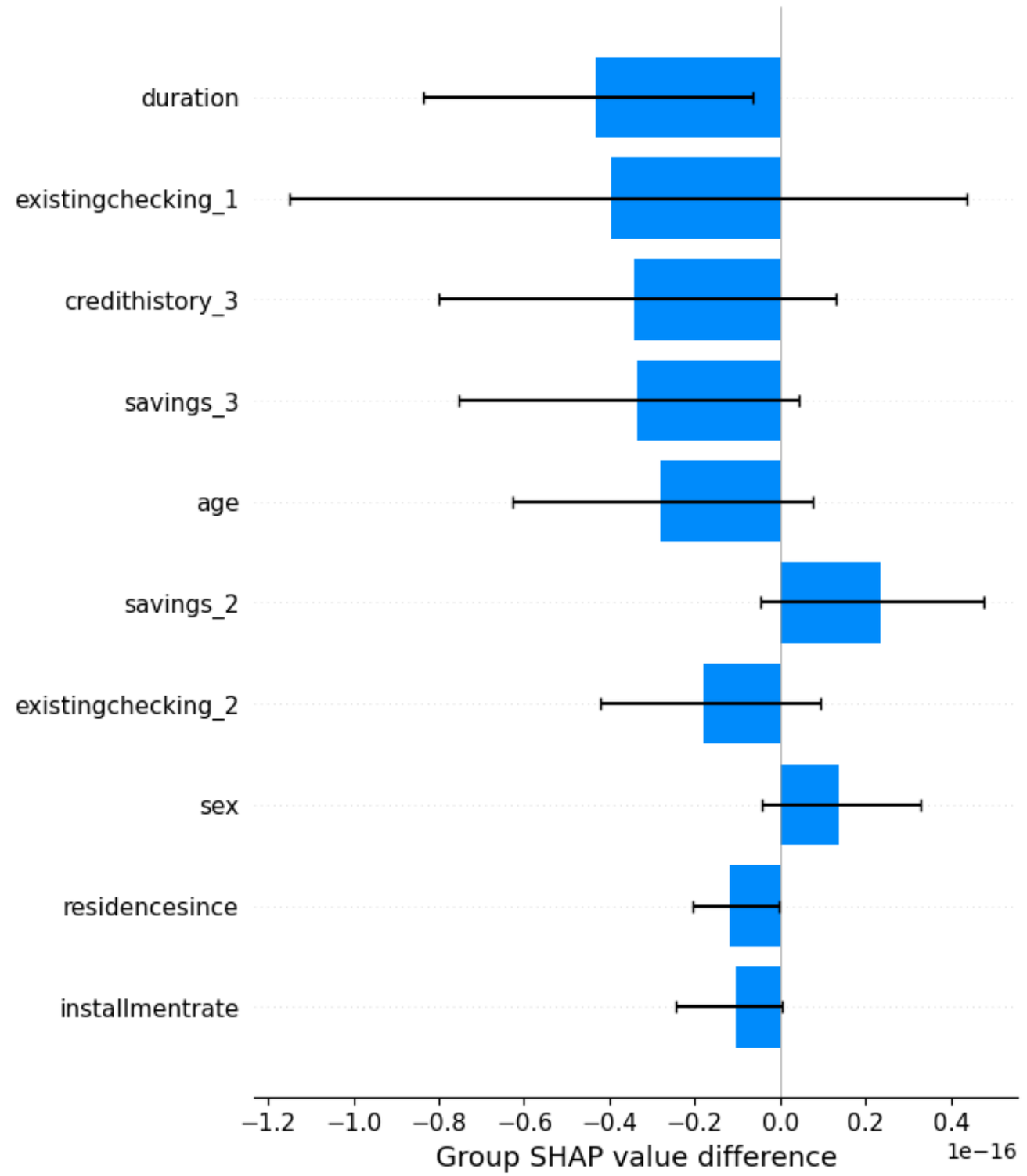
Treatment #2: Default x SVM



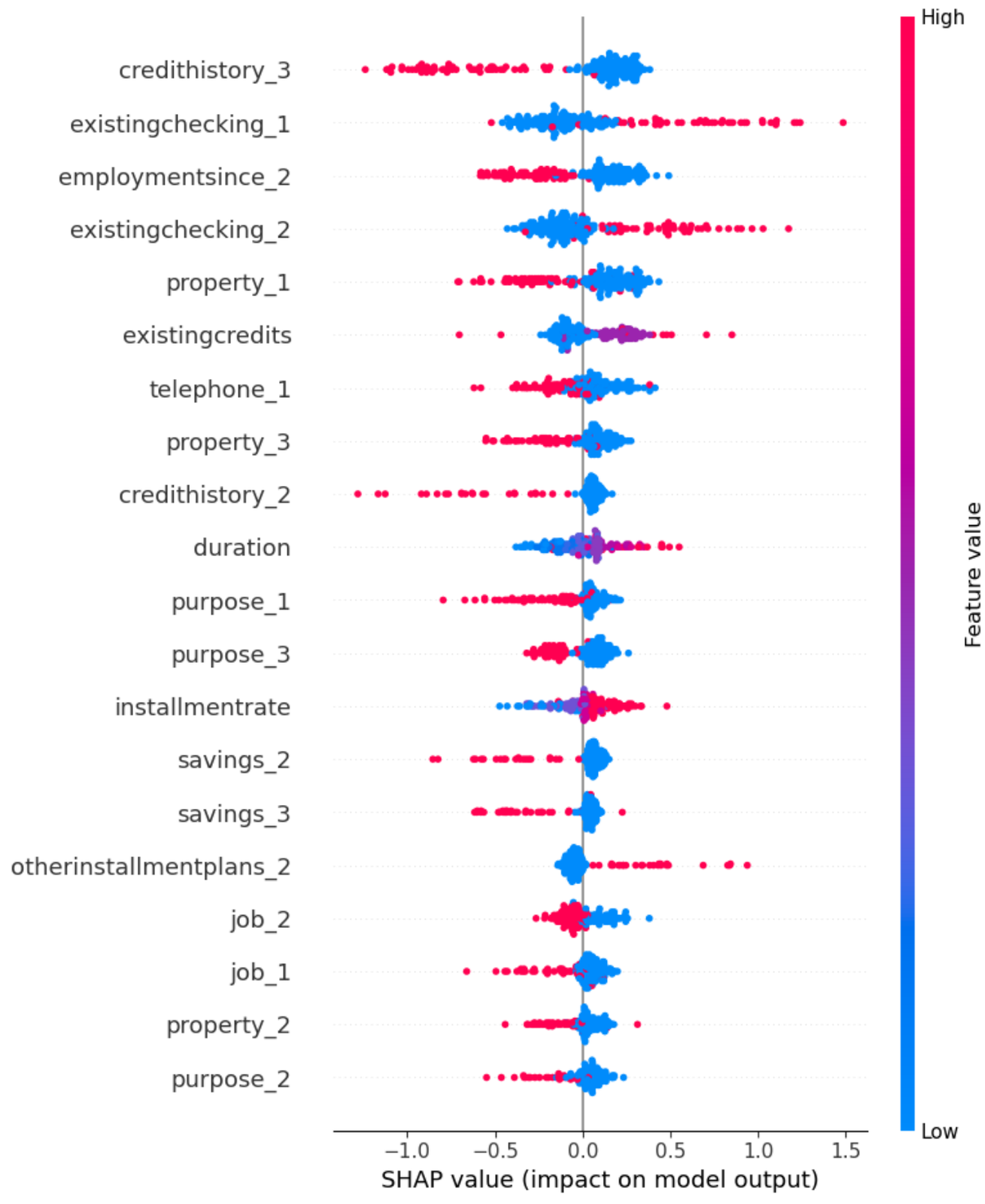


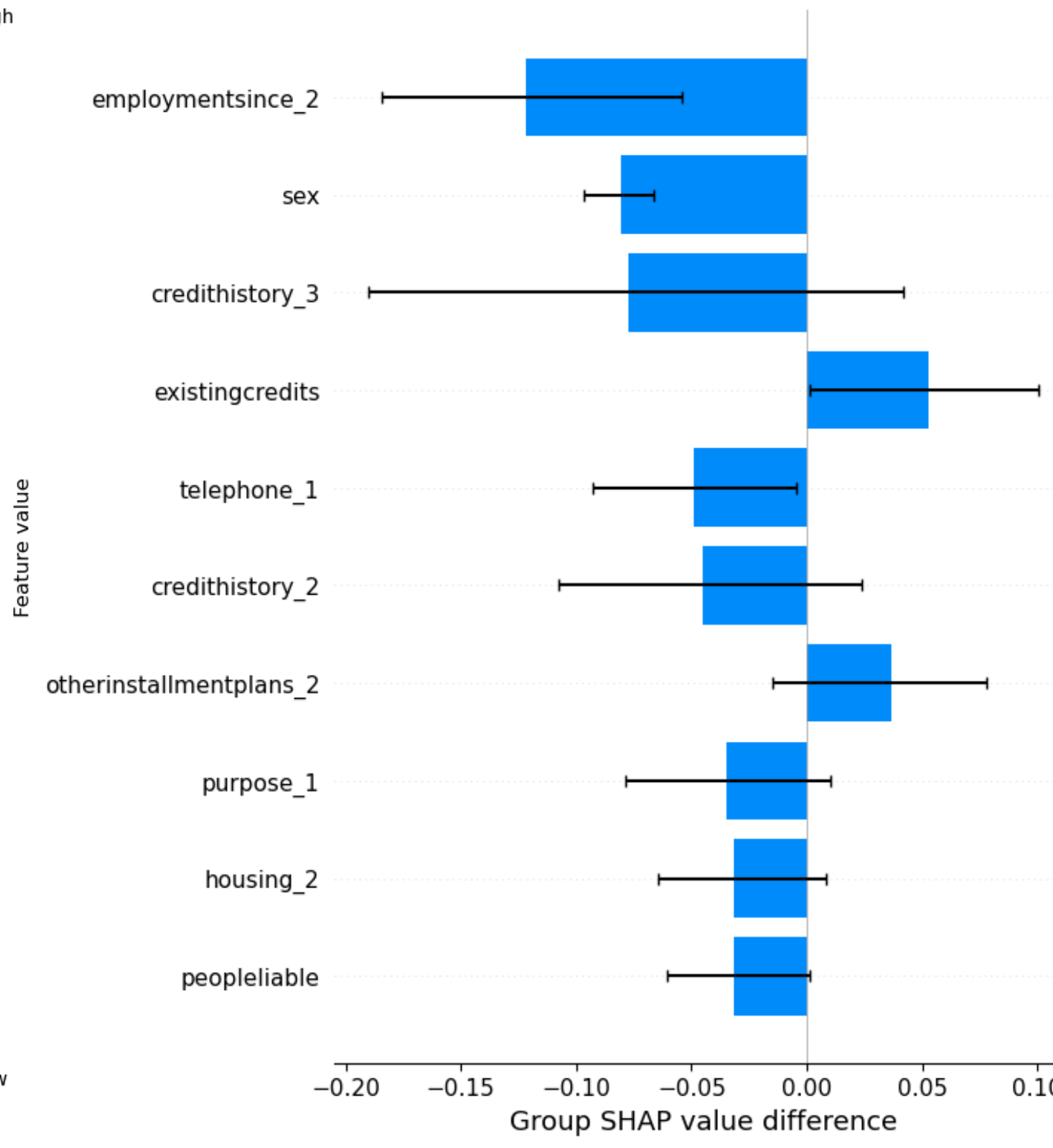
Treatment #3: Default x RF





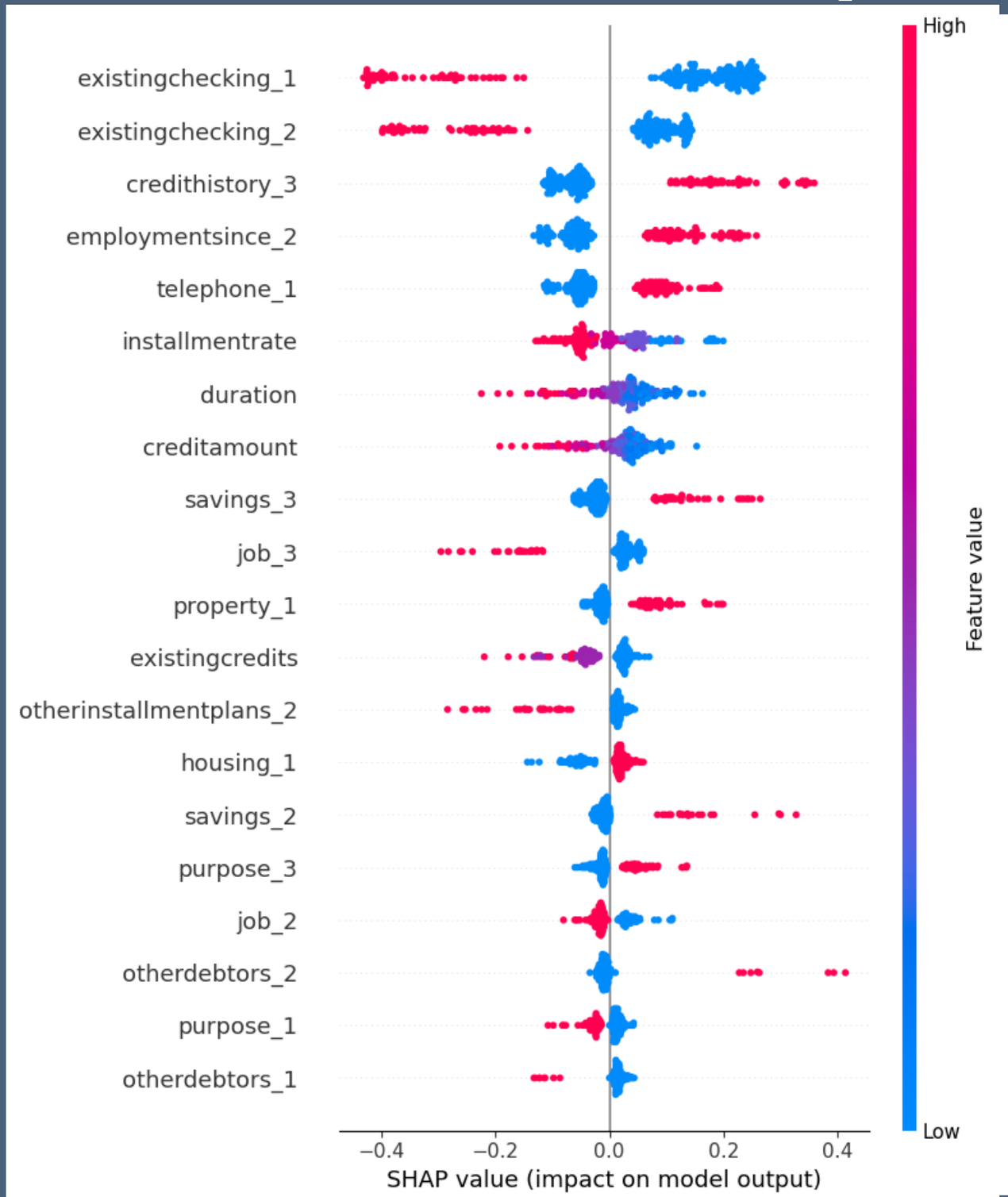
Treatment #4: Default x MLP

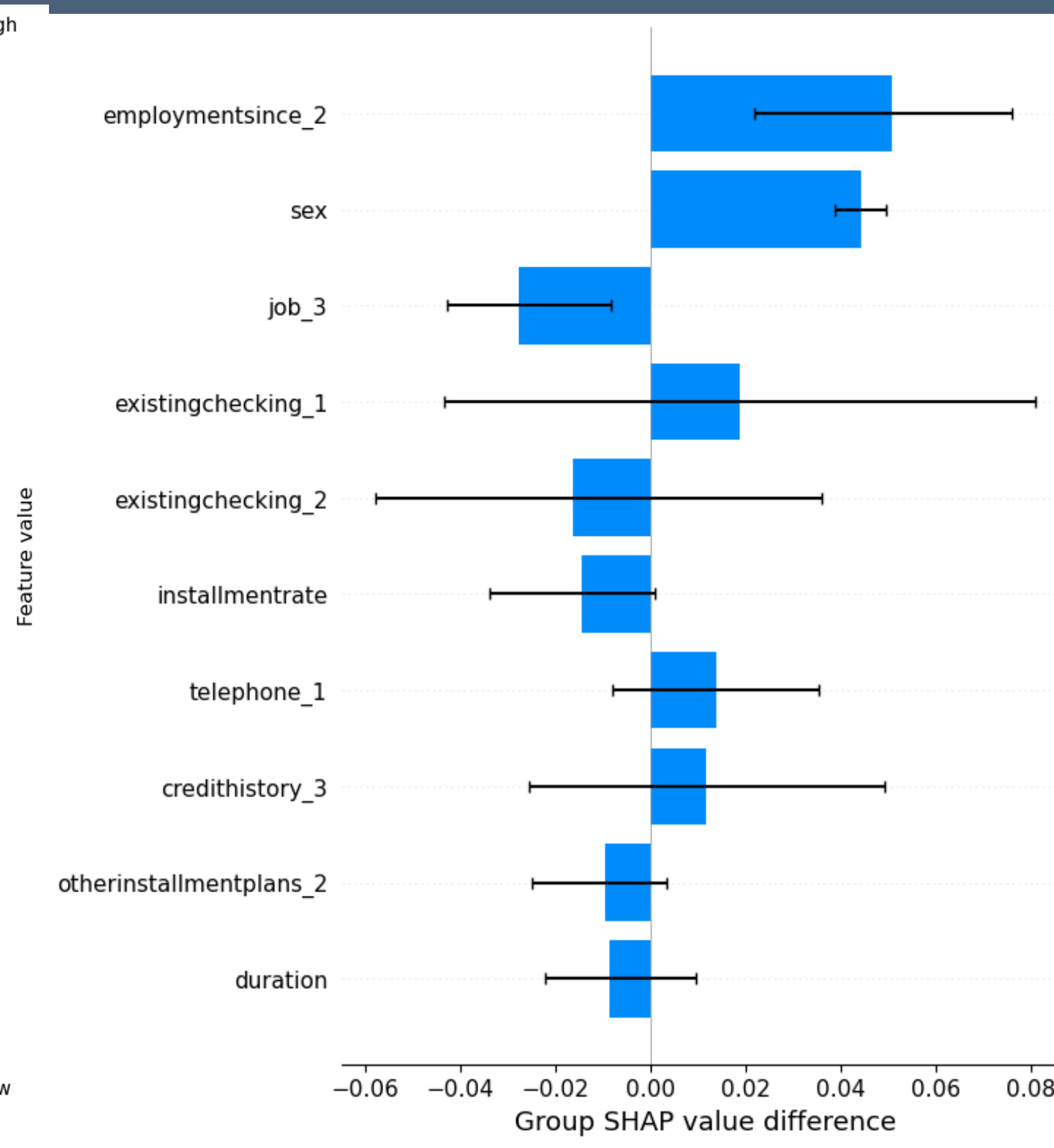




Treatment #5: ROS x LR

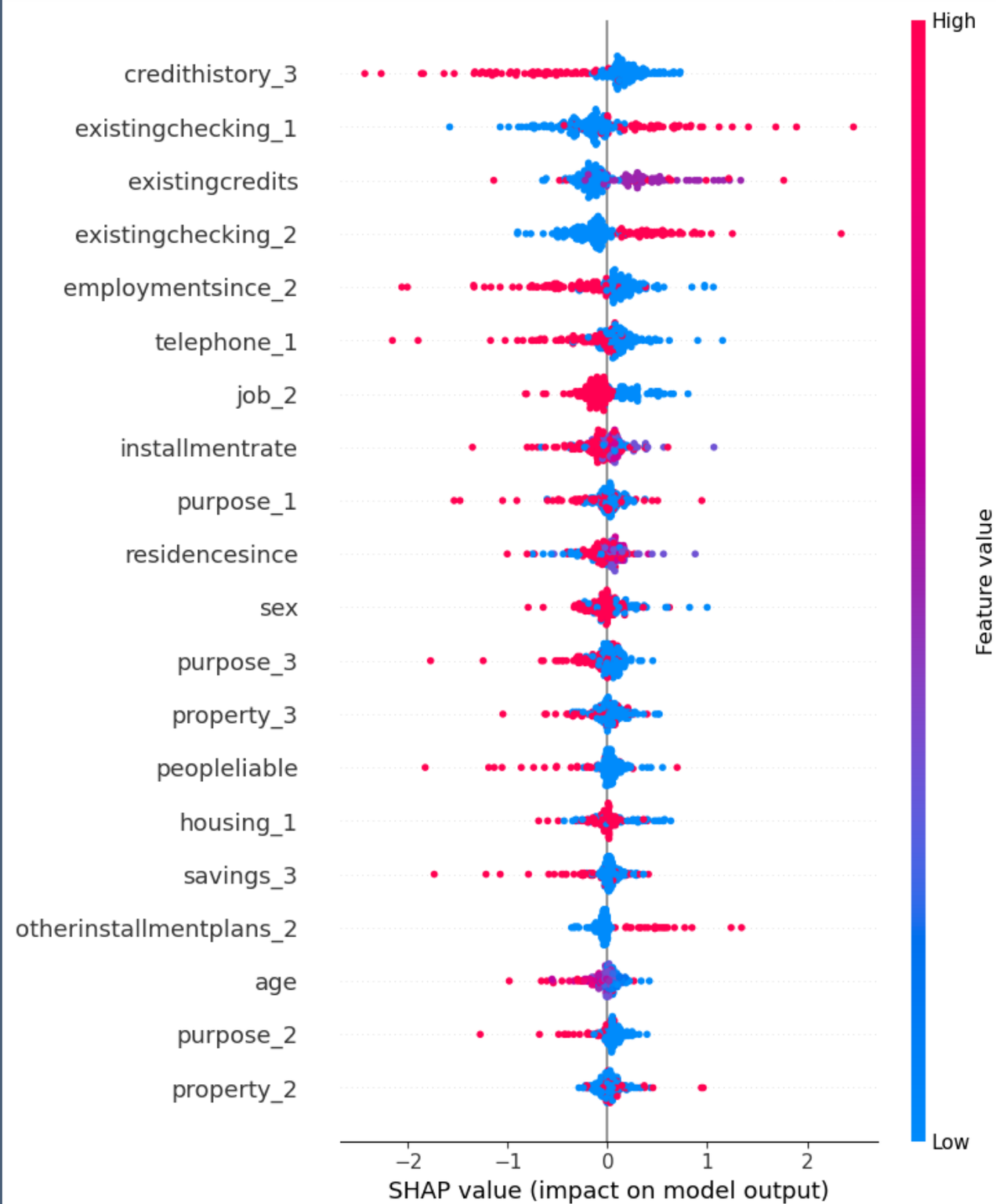
ROS = RandomOverSampler

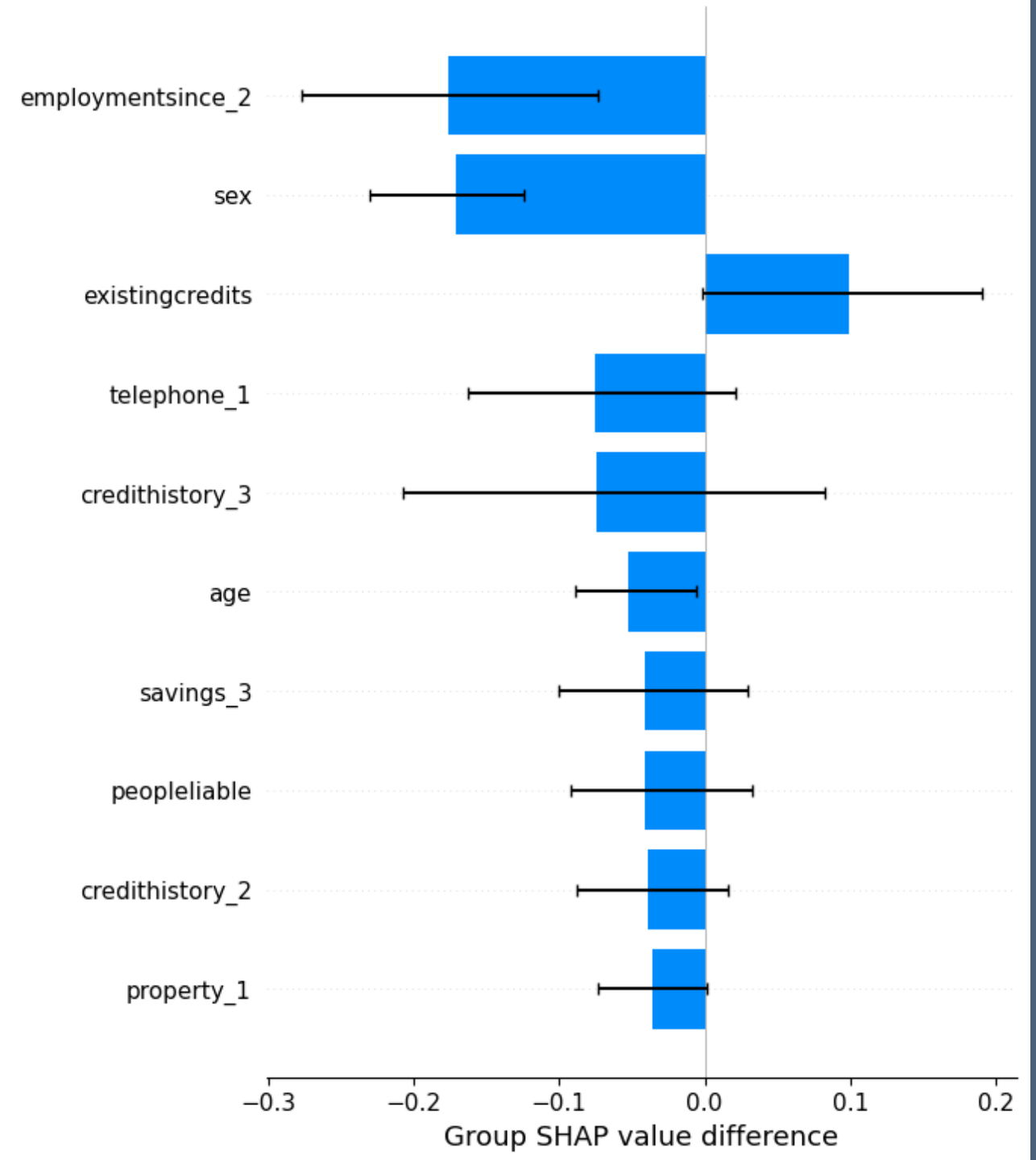




Treatment #6: ROS x SVM

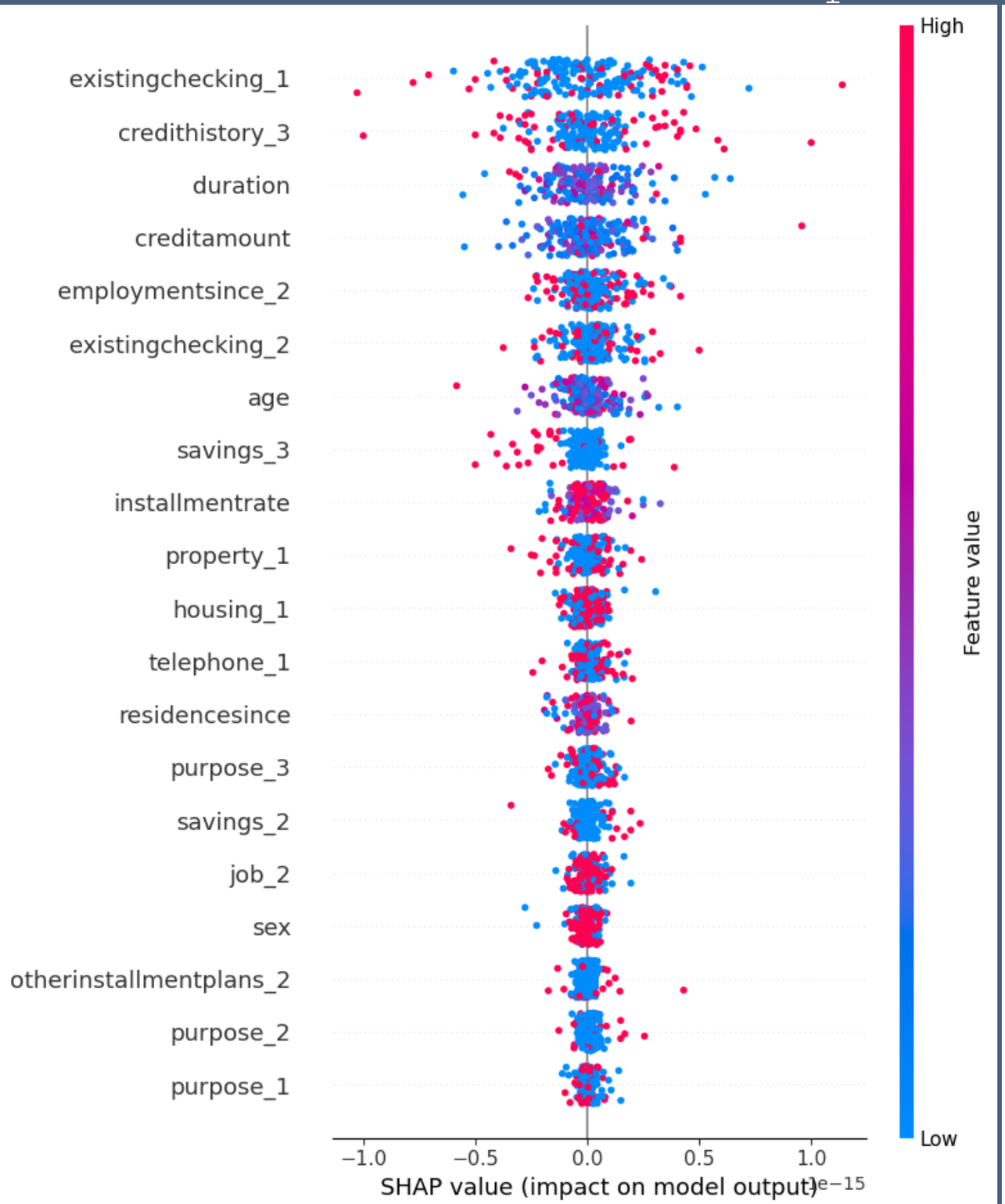
ROS = RandomOverSampler

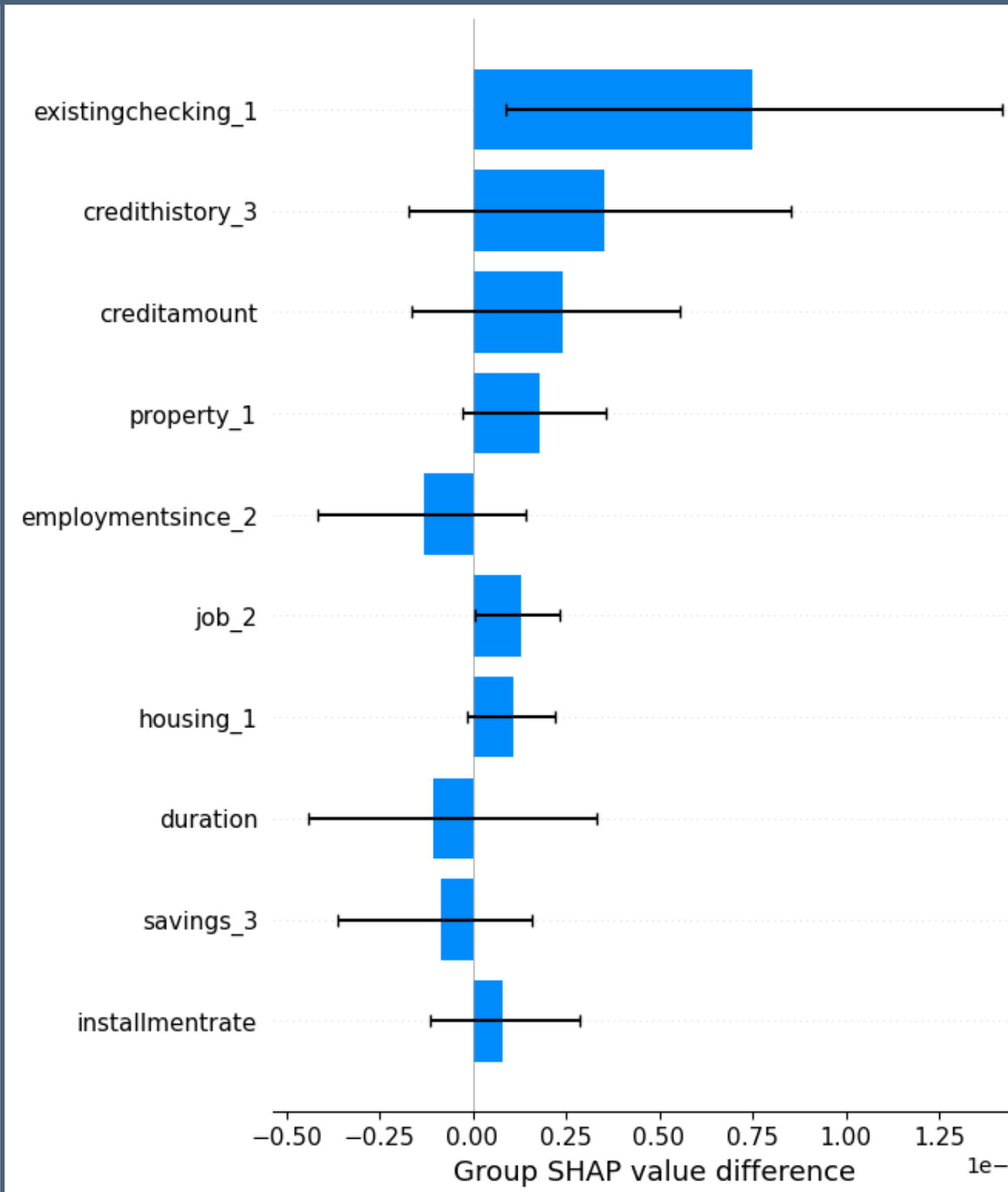




Treatment #7: ROS x RF

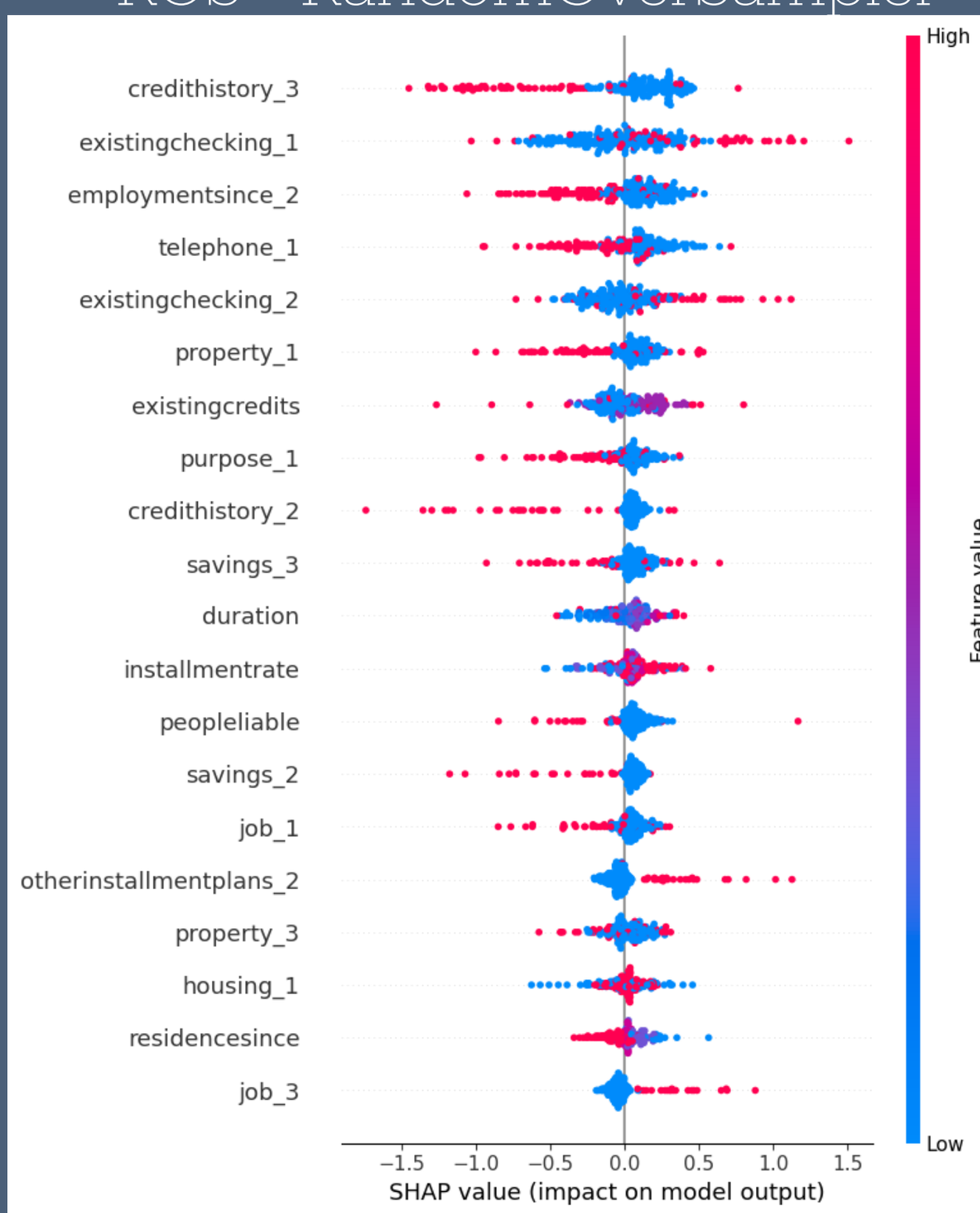
ROS = RandomOverSampler

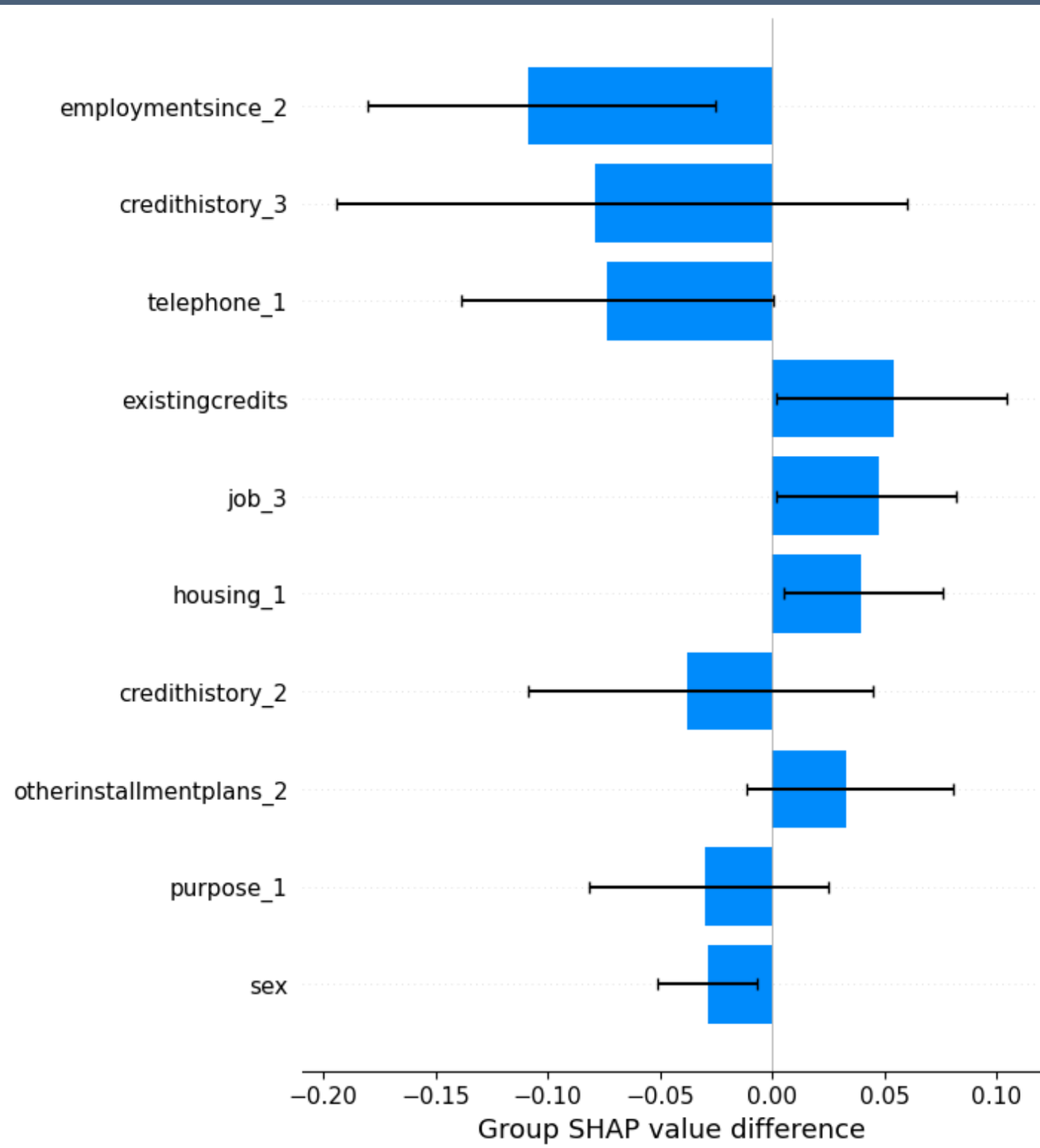




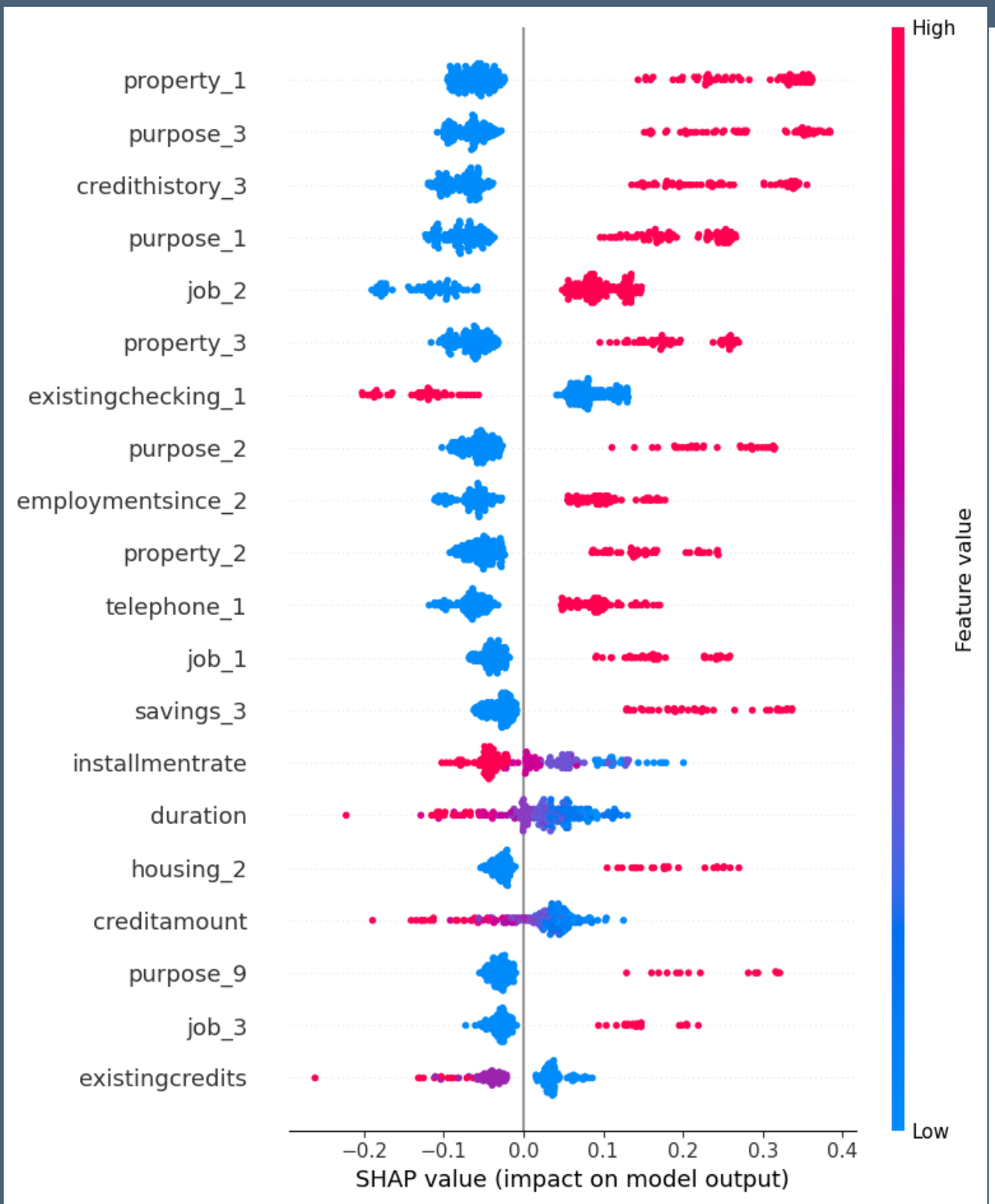
Treatment #8: ROS x MLP

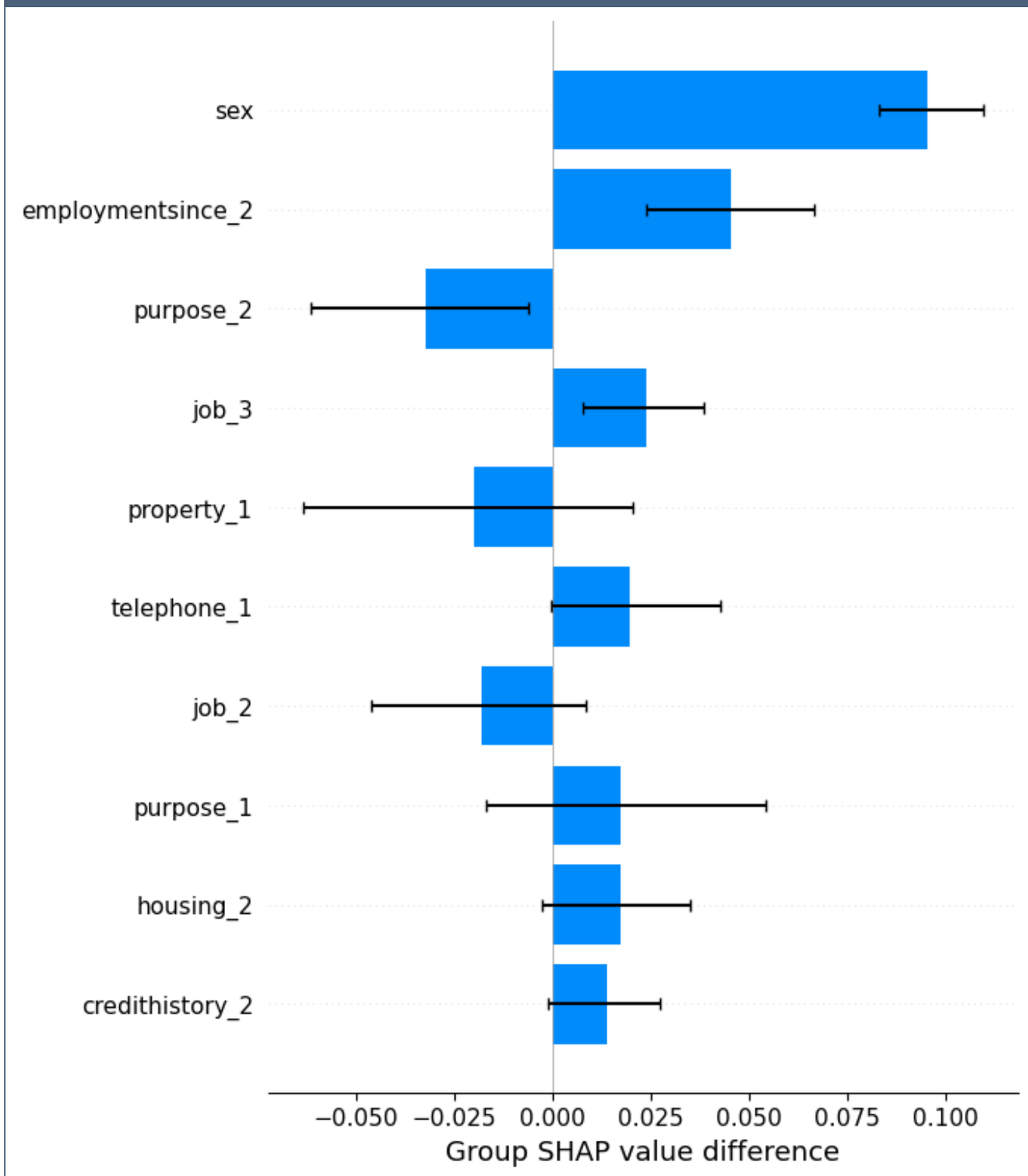
ROS = RandomOverSampler



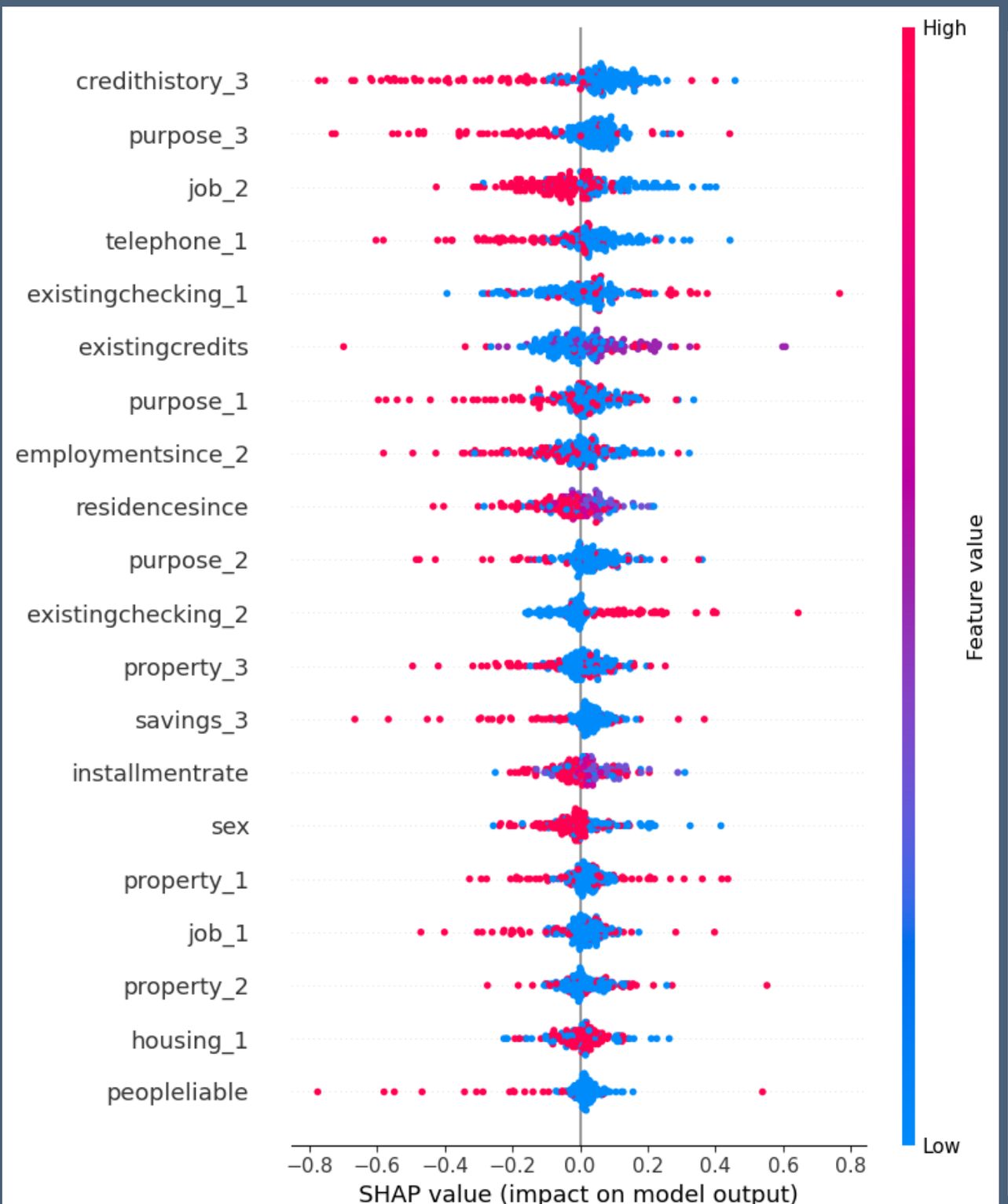


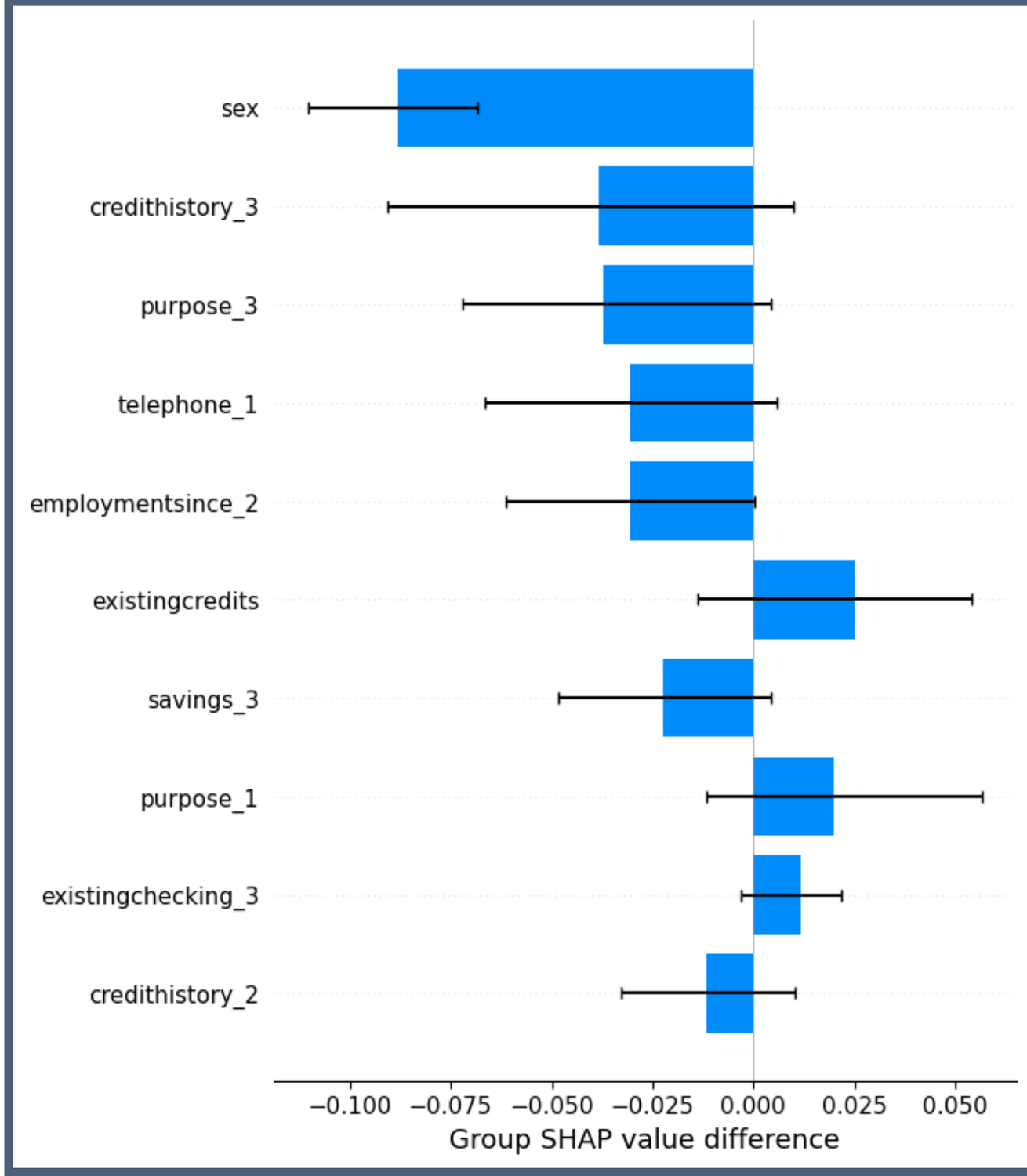
Treatment #9: SMOTE x LR



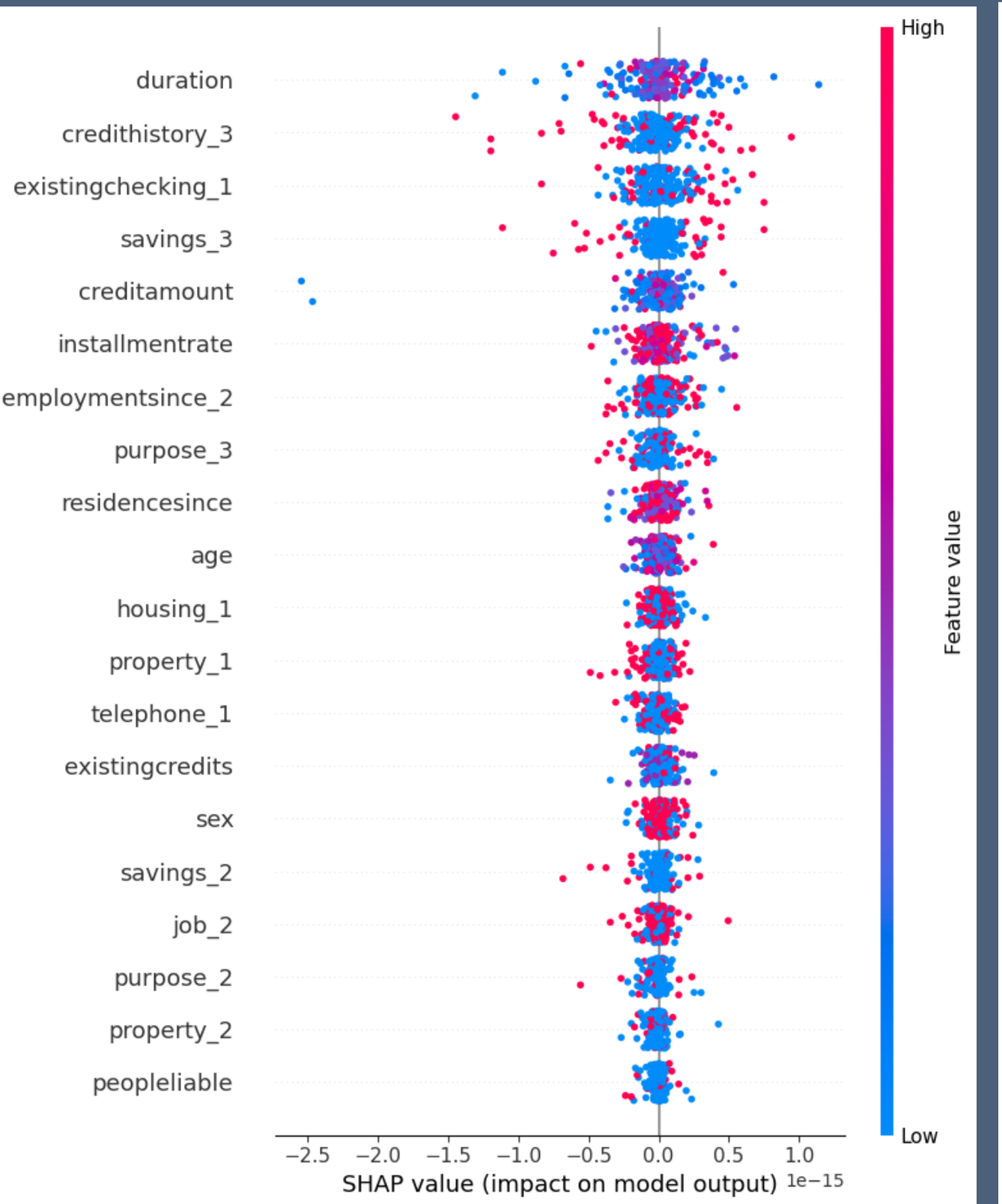


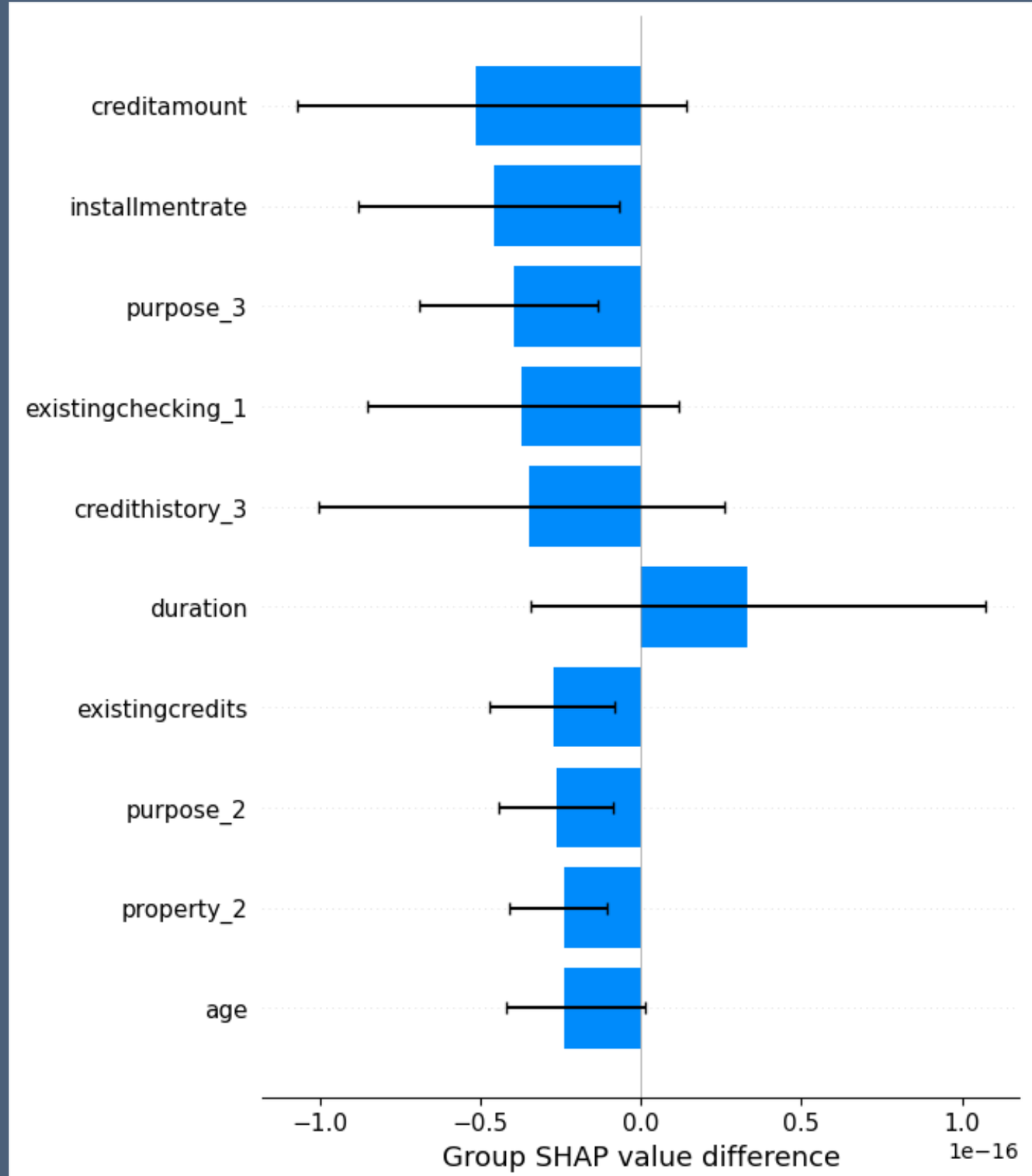
Treatment #10: SMOTE x SVM



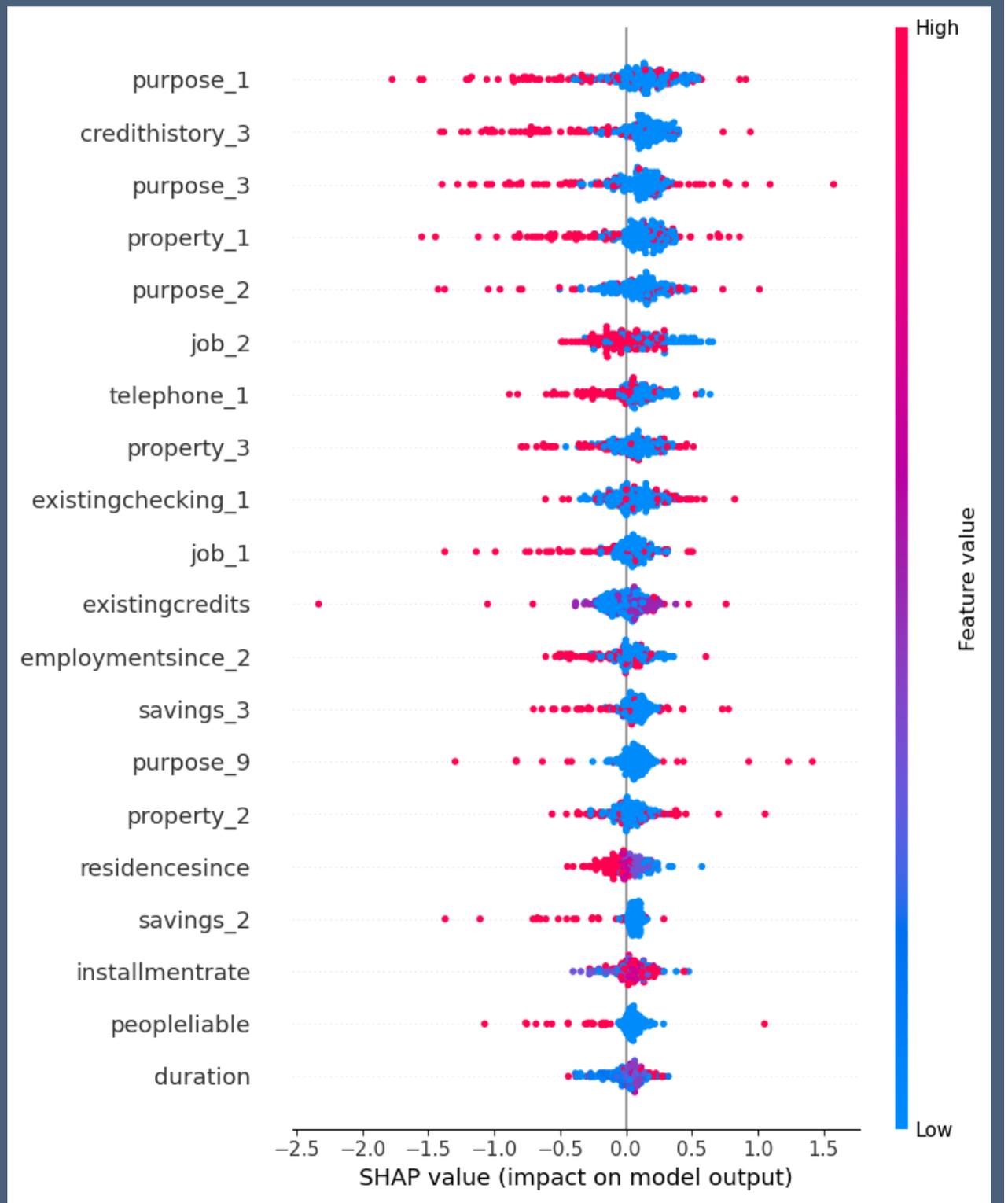


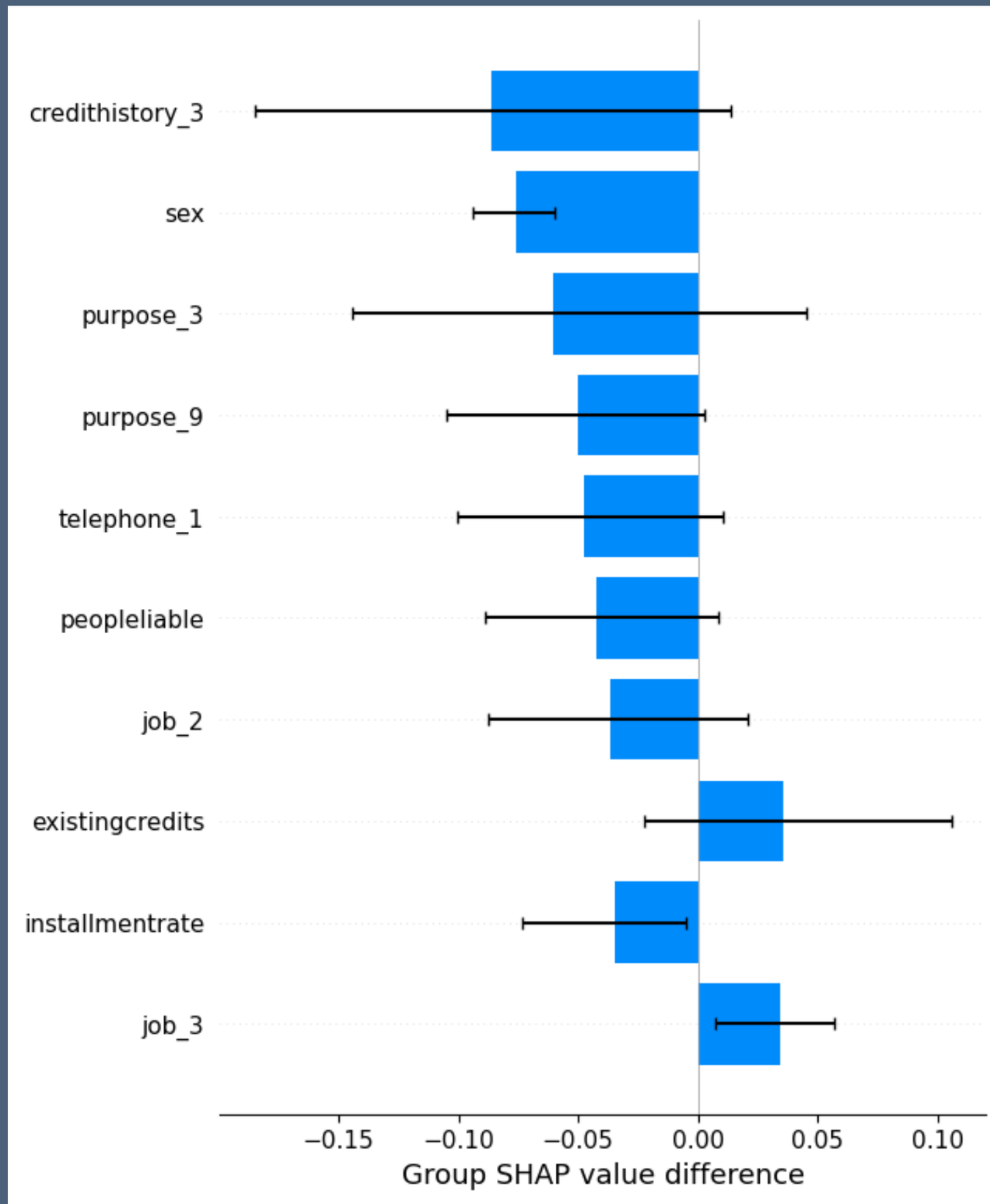
Treatment #11: SMOTE x RF





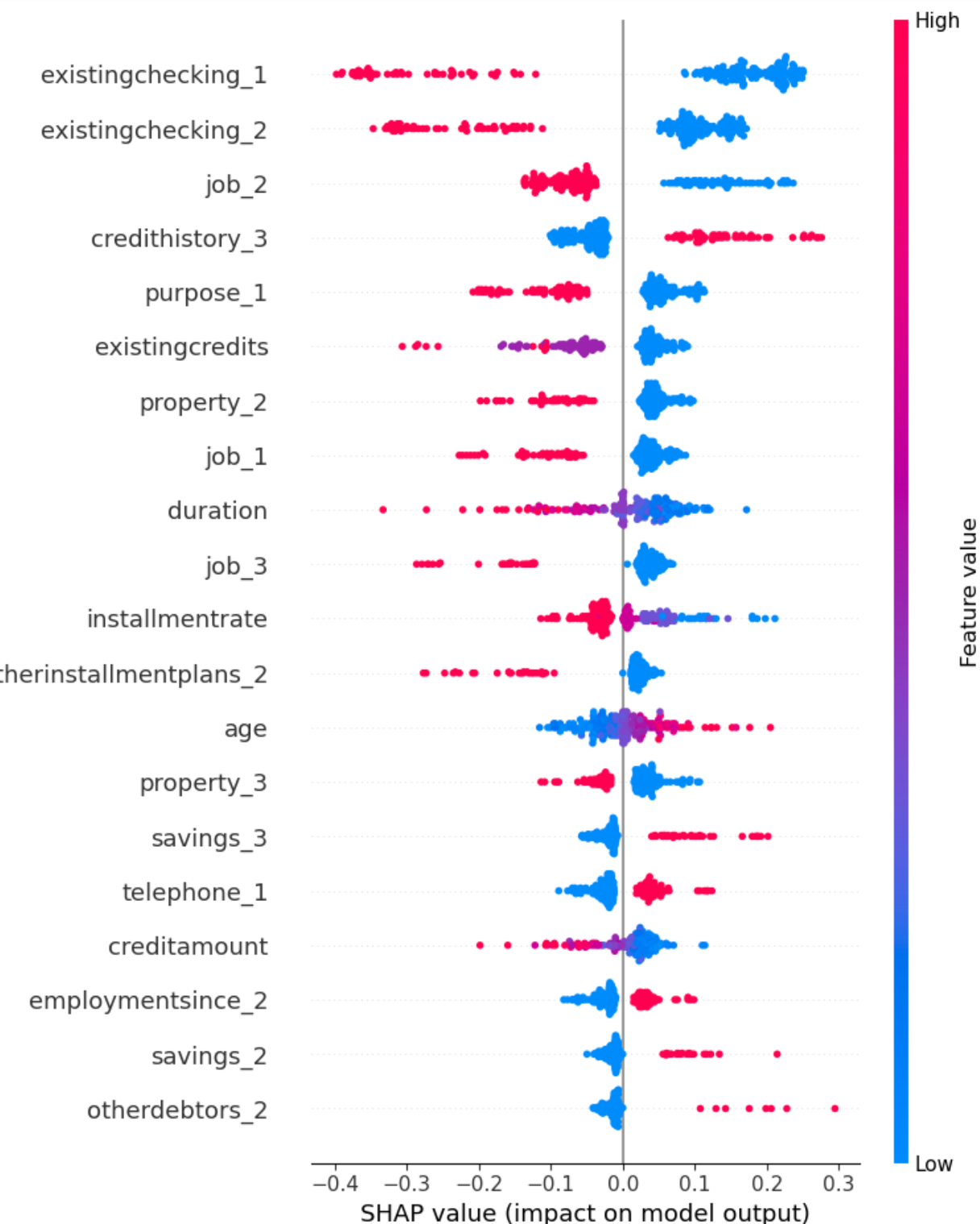
Treatment #12: SMOTE x MLP

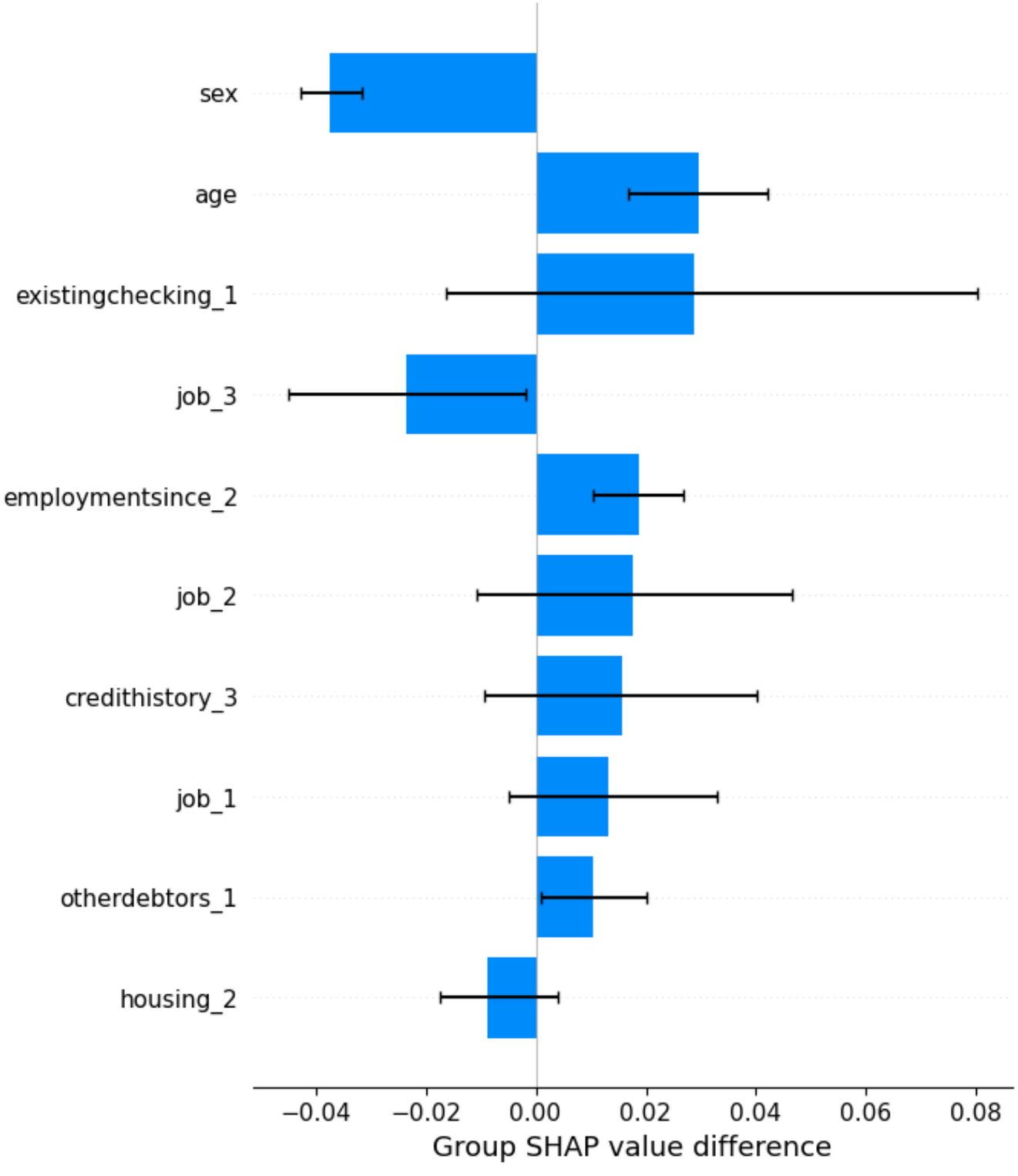




Treatment #13: Fair-SMO x LR

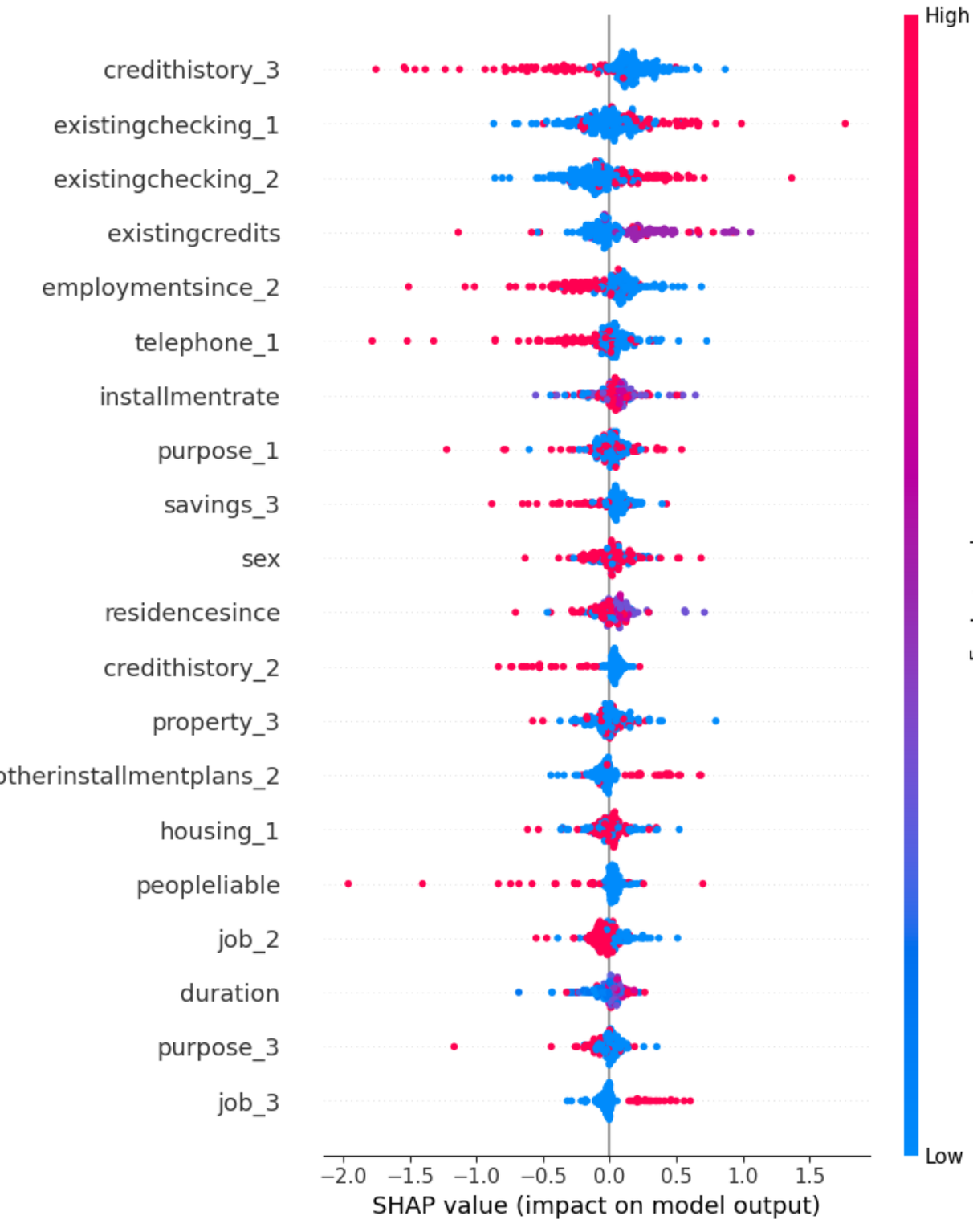
Fair-SMO = Fair-SMOTE

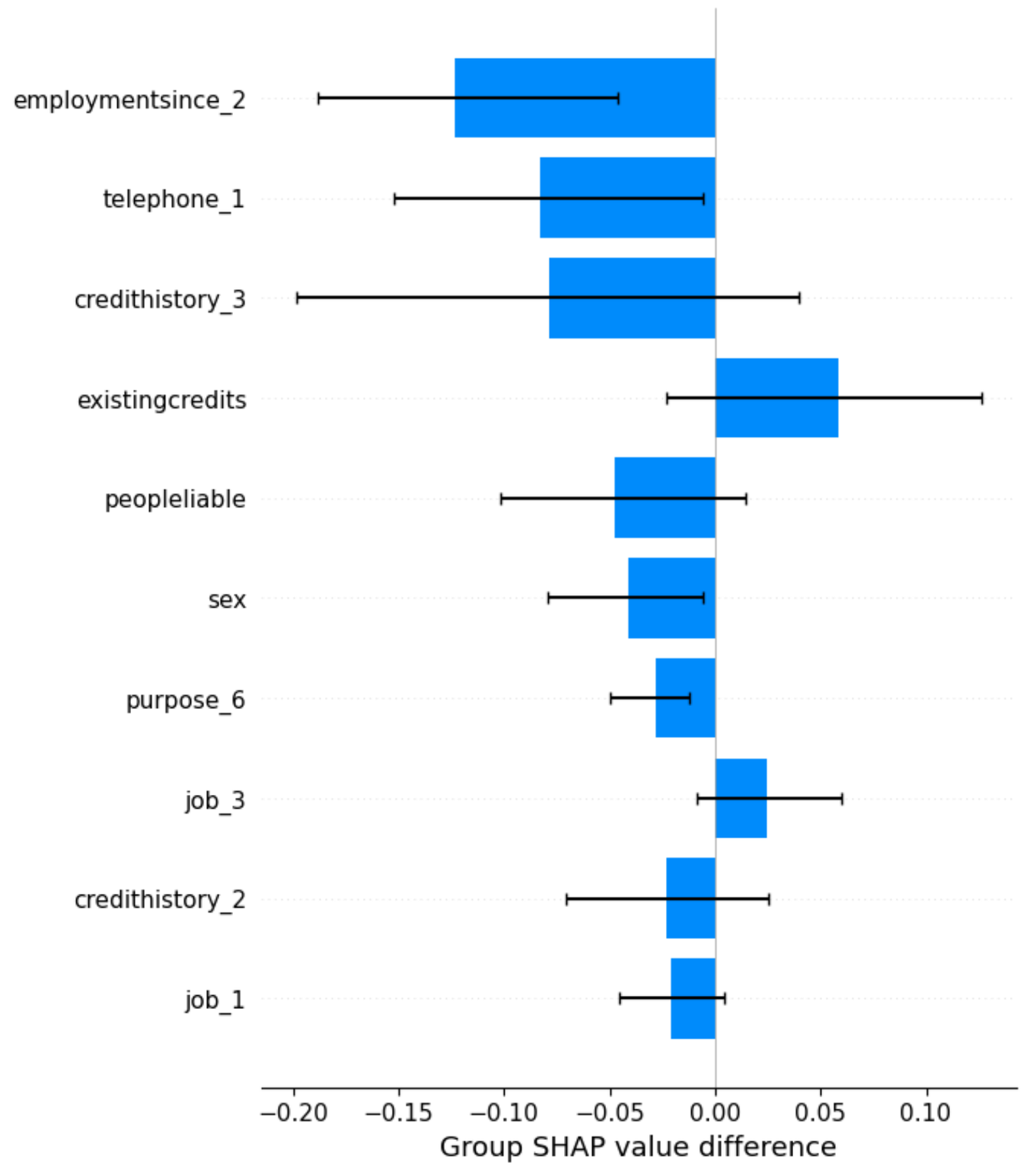




Treatment #14: Fair-SMO x SVM

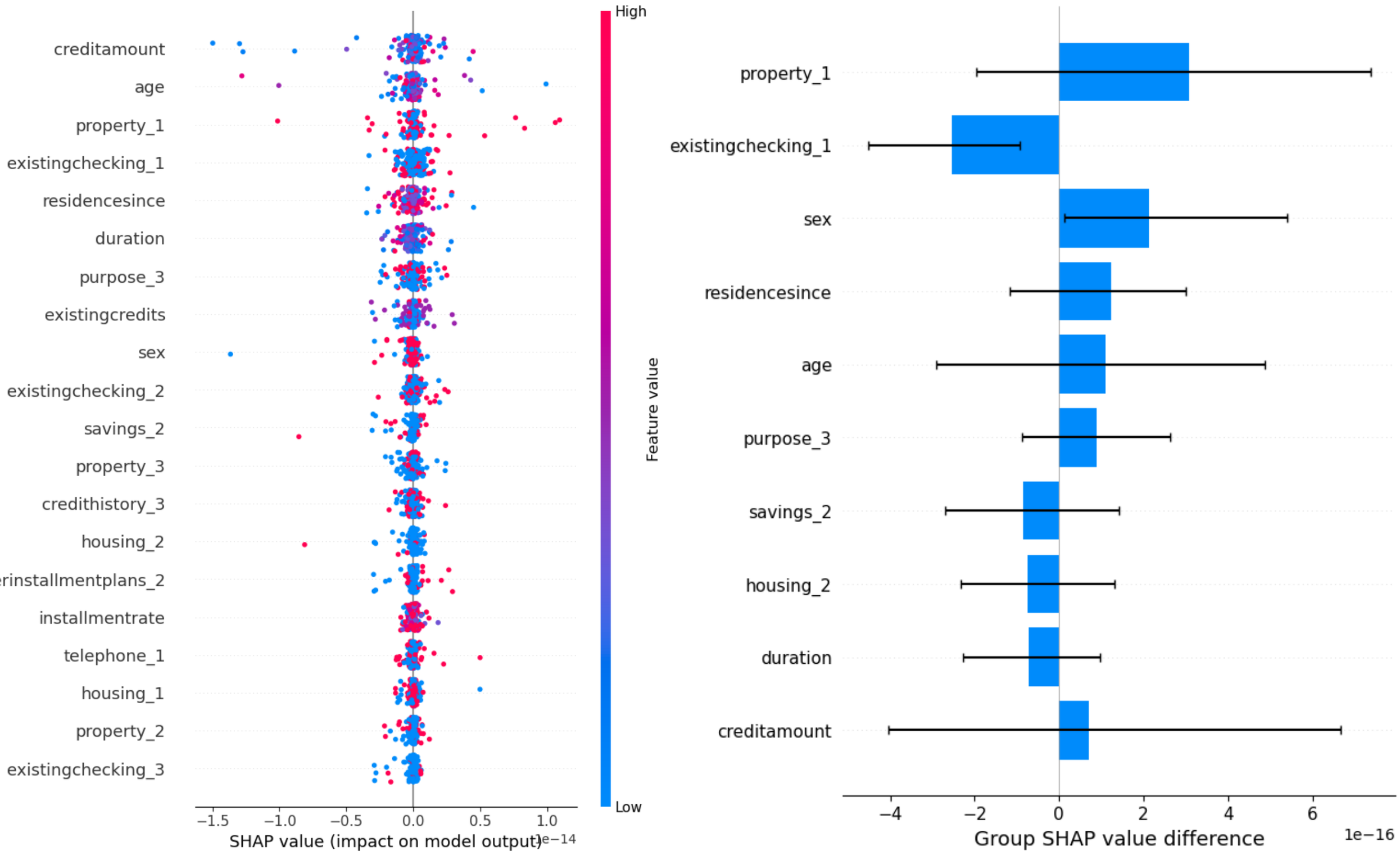
Fair-SMO = Fair-SMOTE





Treatment #15: Fair-SMO x RF

Fair-SMO = Fair-SMOTE



Treatment #16: Fair-SMO x MLP

Fair-SMO = Fair-SMOTE