Table 2. Overall results across 16 methods for the offline pipeline

Variant	ROC AUC (↑)	Log Loss (↓)	Accuracy (↑)	Precision (↑)	Recall (↑)	SPD (∼ 0)	EOD (∼ 0)	Rank Perf (↓)	Rank Fair (↓)
rep=0.5 | lbl=0.0									
none	0.985	0.193	**0.950**	**0.948**	**0.929**	-0.483	-0.124	3	4
reweight_auto	0.985	0.174	0.944	0.936	0.925	-0.443	-0.069	4	2
reweight_manual_A0.5_B1.5	0.985	0.151	0.940	0.938	0.913	-0.485	-0.141	2	5
mitigator_demographic_parity	0.919	0.377	0.759	0.655	0.860	**-0.008**	**0.063**	5	1
mitigator_equalized_odds	**0.986**	**0.146**	0.945	0.942	0.921	-0.458	-0.089	1	3
rep=0.5 | lbl=0.4									
none	0.978	0.302	**0.937**	**0.920**	0.918	-0.663	-0.380	2	5
reweight_auto	0.974	0.339	0.925	0.887	**0.926**	-0.623	-0.272	4	2
reweight_manual_A0.5_B1.5	0.977	0.335	0.930	0.908	0.912	-0.661	-0.344	3	4
mitigator_demographic_parity	0.818	0.606	0.617	0.505	0.803	**0.077**	**0.038**	5	1
mitigator_equalized_odds	**0.979**	**0.179**	0.926	0.918	0.891	-0.622	-0.350	1	3
rep=0.5 | lbl=0.5									
none	0.984	**0.159**	0.943	0.913	**0.947**	-0.666	-0.288	1	5
reweight_auto	0.981	0.198	0.930	**0.951**	0.871	-0.604	-0.310	4	3
reweight_manual_A0.5_B1.5	0.982	0.187	0.942	0.948	0.904	-0.641	-0.276	3	4
mitigator_demographic_parity	0.811	0.764	0.660	0.551	0.814	**0.000**	**0.095**	5	1
mitigator_equalized_odds	**0.984**	0.160	0.942	0.937	0.916	-0.630	-0.255	2	2
rep=0.5 | lbl=0.6									
none	0.974	0.299	0.918	0.901	0.886	-0.682	-0.661	3	5
reweight_auto	0.968	0.345	0.915	0.867	**0.924**	-0.656	**-0.382**	4	2
reweight_manual_A0.5_B1.5	0.975	0.253	0.920	**0.914**	0.878	-0.680	-0.617	2	3
mitigator_demographic_parity	0.785	0.607	0.573	0.386	0.160	**0.152**	0.647	5	1
mitigator_equalized_odds	**0.976**	**0.200**	**0.922**	0.904	0.895	-0.677	-0.635	1	4
rep=0.6 | lbl=0.0									
none	0.980	0.180	0.929	**0.925**	0.910	-0.429	-0.109	3	3
reweight_auto	0.976	0.252	0.923	0.915	0.908	-0.407	-0.077	4	2
reweight_manual_A0.5_B1.5	0.978	0.184	**0.934**	0.915	**0.934**	-0.444	-0.123	2	5
mitigator_demographic_parity	0.920	0.448	0.795	0.702	0.915	**-0.031**	**0.007**	5	1
mitigator_equalized_odds	0.980	0.182	0.933	0.915	0.932	-0.436	-0.105	1	4
rep=0.6 | lbl=0.4									
none	0.975	0.273	0.917	**0.949**	0.869	-0.629	-0.553	3	5
reweight_auto	0.972	0.373	0.924	0.919	0.919	-0.620	-0.404	4	3
reweight_manual_A0.5_B1.5	0.975	0.276	0.921	0.942	0.888	-0.636	-0.487	2	4
mitigator_demographic_parity	0.835	0.833	0.699	0.617	**0.948**	**0.019**	**-0.003**	5	1
mitigator_equalized_odds	**0.979**	**0.184**	**0.928**	0.913	0.936	-0.643	-0.365	1	2
rep=0.6 | lbl=0.5									
none	0.982	0.220	**0.939**	0.975	0.890	-0.592	-0.430	2	2
reweight_auto	0.976	0.229	0.936	0.964	0.893	-0.592	-0.433	3	3
reweight_manual_A0.5_B1.5	0.982	0.226	0.929	**0.982**	0.859	-0.582	-0.466	4	4
mitigator_demographic_parity	0.941	0.547	0.689	0.600	**0.947**	**0.081**	**-0.080**	5	1
mitigator_equalized_odds	**0.983**	**0.165**	0.939	0.950	0.915	-0.614	-0.456	1	5
rep=0.6 | lbl=0.6									
none	0.980	0.177	0.938	0.920	0.952	-0.704	-0.520	2	3
reweight_auto	0.977	0.211	0.925	0.896	0.952	-0.683	-0.520	4	2
reweight_manual_A0.5_B1.5	0.979	0.181	0.932	0.901	0.962	-0.729	-0.530	3	5
mitigator_demographic_parity	0.840	0.980	0.678	0.598	**0.971**	**0.016**	**-0.073**	5	1
mitigator_equalized_odds	**0.982**	**0.174**	**0.939**	0.920	0.953	-0.705	-0.521	1	4
rep=0.7 | lbl=0.0									
none	0.977	0.209	**0.934**	0.929	0.935	-0.429	-0.144	4	5
reweight_auto	0.976	0.191	0.931	**0.939**	0.917	-0.421	-0.123	3	3
reweight_manual_A0.5_B1.5	0.976	0.193	0.932	0.934	0.923	-0.425	-0.131	2	4
mitigator_demographic_parity	0.950	0.341	0.830	0.762	**0.942**	**-0.009**	**-0.007**	5	1
mitigator_equalized_odds	**0.978**	**0.187**	0.934	0.927	0.937	-0.427	-0.110	1	2
rep=0.7 | lbl=0.4									
none	0.981	0.194	**0.940**	0.938	0.949	-0.629	-0.331	2	5
reweight_auto	0.979	0.186	0.935	0.936	0.942	-0.592	-0.288	4	2
reweight_manual_A0.5_B1.5	0.981	0.192	0.937	0.936	0.945	-0.623	-0.326	3	4
mitigator_demographic_parity	0.880	0.760	0.780	0.720	**0.954**	**-0.024**	**-0.091**	5	1
mitigator_equalized_odds	**0.982**	**0.169**	0.940	**0.947**	0.939	-0.617	-0.320	1	3
rep=0.7 | lbl=0.5									
none	0.978	**0.186**	0.930	0.908	0.967	-0.654	-0.389	2	3
reweight_auto	0.973	0.231	0.932	0.938	0.934	-0.645	-0.475	4	5
reweight_manual_A0.5_B1.5	0.978	0.190	0.933	**0.946**	0.927	-0.654	-0.409	3	4
mitigator_demographic_parity	0.951	0.474	0.722	0.662	**0.973**	**0.098**	**-0.032**	5	1
mitigator_equalized_odds	**0.979**	0.188	**0.936**	0.929	0.952	-0.651	-0.373	1	2
rep=0.7 | lbl=0.6									
none	0.970	0.217	0.916	0.904	0.943	-0.678	-0.419	2	4
reweight_auto	0.969	0.264	0.910	0.885	**0.955**	-0.652	-0.363	4	2
reweight_manual_A0.5_B1.5	**0.972**	0.236	**0.921**	**0.924**	0.928	-0.685	-0.472	3	5
mitigator_demographic_parity	0.848	0.710	0.770	0.716	0.946	**-0.078**	**-0.286**	5	1
mitigator_equalized_odds	0.970	**0.215**	0.917	0.915	0.931	-0.659	-0.407	1	3
rep=0.8 | lbl=0.0									
none	0.966	0.551	0.917	0.921	0.918	-0.404	-0.107	5	4
reweight_auto	0.968	0.467	**0.924**	**0.936**	0.917	-0.388	-0.106	3	2
reweight_manual_A0.5_B1.5	0.967	0.474	0.918	0.928	0.914	-0.402	-0.127	4	5
mitigator_demographic_parity	0.948	0.346	0.892	0.866	**0.938**	**-0.162**	**-0.031**	2	1
mitigator_equalized_odds	**0.970**	**0.237**	0.921	0.930	0.917	-0.397	-0.106	1	3
rep=0.8 | lbl=0.4									
none	**0.981**	0.184	0.941	0.961	0.937	-0.619	-0.412	2	4
reweight_auto	0.975	0.334	0.936	0.952	0.939	-0.595	-0.346	4	3
reweight_manual_A0.5_B1.5	0.980	0.264	0.946	**0.963**	0.945	-0.645	-0.489	3	5
mitigator_demographic_parity	0.872	0.587	0.831	0.794	**0.962**	**-0.006**	**-0.165**	5	1
mitigator_equalized_odds	0.980	**0.167**	**0.948**	0.951	0.960	-0.607	-0.232	1	2
rep=0.8 | lbl=0.5									
none	**0.978**	0.195	**0.944**	0.942	0.963	-0.669	-0.750	2	5
reweight_auto	0.974	0.275	0.930	0.948	0.931	-0.651	-0.718	4	3
reweight_manual_A0.5_B1.5	0.975	0.205	0.939	**0.953**	0.942	-0.682	-0.729	3	4
mitigator_demographic_parity	0.885	0.536	0.828	0.789	**0.964**	**-0.044**	**-0.076**	5	1
mitigator_equalized_odds	0.978	**0.178**	0.942	0.941	0.961	-0.648	-0.524	1	2
rep=0.8 | lbl=0.6									
none	0.971	0.227	0.926	0.922	0.959	-0.679	-0.686	2	5
reweight_auto	0.971	0.219	0.909	0.882	**0.981**	-0.591	-0.418	4	2
reweight_manual_A0.5_B1.5	0.972	0.207	**0.926**	**0.930**	0.951	-0.672	-0.605	1	4
mitigator_demographic_parity	0.922	0.427	0.828	0.796	0.964	**-0.082**	**-0.109**	5	1
mitigator_equalized_odds	**0.972**	**0.204**	0.916	0.915	0.951	-0.630	-0.532	3	3