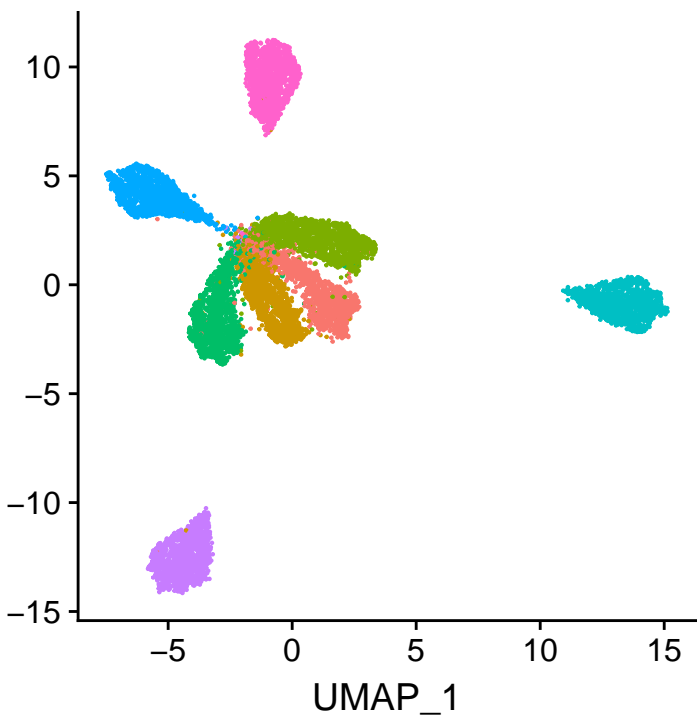
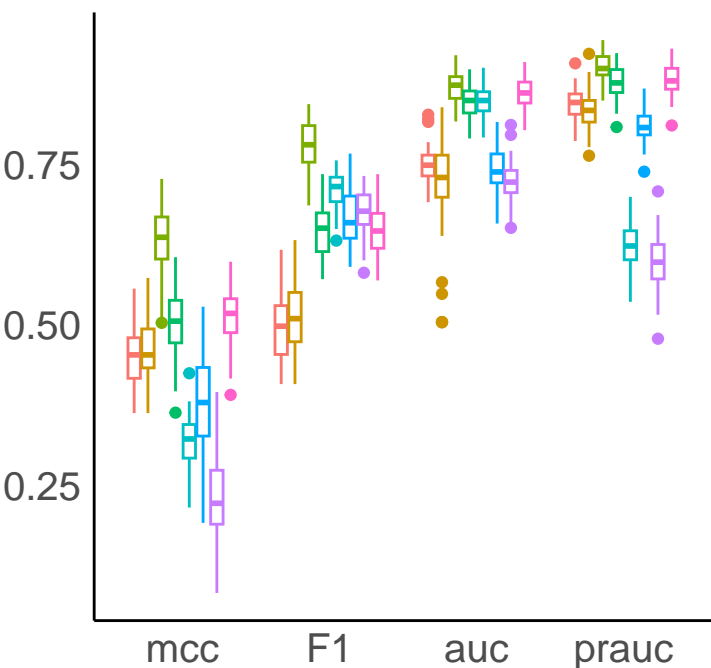
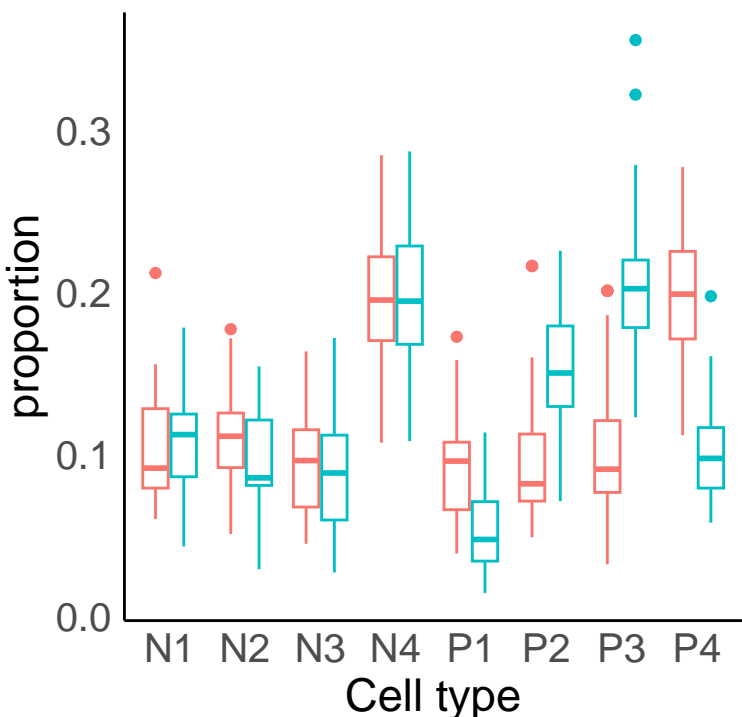


Simulation data (8 Cell Types)

UMAP_2



condition Condition 1 Condition 2 ancombc DCATS Fisher scDC
 bcancombc diffcyt milo speckle



value 0.2 0.4 0.6

value 0.7 0.8

value 0.2 0.4 0.6

value 0.7 0.8 0.9

	mcc			auc			mcc			auc		
DCATS	0.462	0.63	0.71	0.76	0.872	0.873	0.63	0.799	0.589	0.872	0.954	0.884
speckle	0.325	0.517	0.665	0.716	0.86	0.866	0.517	0.623	0.463	0.86	0.928	0.872
diffcyt	0.318	0.504	0.665	0.733	0.848	0.862	0.504	0.669	0.47	0.848	0.929	0.862
milo	0.211	0.382	0.279	0.613	0.742	0.675	0.382	0.415	0.301	0.742	0.767	0.652
Fisher	0.181	0.321	0.233	0.733	0.843	0.862	0.321	0.363	0.22	0.843	0.949	0.878
ancombc	0.173	0.447	0.373	0.643	0.747	0.804	0.447	0.378	0.293	0.747	0.783	0.736
bcancombc	0.157	0.455	0.342	0.651	0.733	0.787	0.455	0.373	0.325	0.733	0.8	0.732
scDC	0.142	0.229	0.319	0.653	0.724	0.832	0.229	0.034	0.088	0.724	0.741	0.696
	2&2	3&3	4&4	2&2	3&3	4&4	8	10	12	8	10	12
	# of Replicates			# of Replicates			# of cell types			# of cell types		

methods

bcancombc	0.965	0.969	0.999
ancombc	0.965	0.969	0.999
dcats_defRef	0.948	0.954	1
dcats_autoRef	0.889	0.899	1
DCATS	0.762	0.775	0.999
speckle	0.273	0.32	0.999
diffcyt	0.273	0.32	0.998
milo	0.151	0.253	0.999
Fisher	0.034	0.224	1
scDC	N.A.	0.222	0.041
	mcc	F1	auc

value 1.00 0.75 0.50 0.25

DCATS	0.504	0.228	0.637
diffcyt	0.395	N.A.	N.A.
speckle	0.388	N.A.	N.A.
Fisher	0.217	N.A.	N.A.
ancombc	0.173	N.A.	0.188
bcancombc	0.16	N.A.	0.211
milo	0.16	0.065	0.156
scDC	0.088	N.A.	N.A.
	condition	age	gender
	covariates		

mcc 0.6 0.4 0.2