

Supplementary Table 5. Comparison of primary MR estimates across population-sensitivity analyses

analysis	Gene-cell type pair	outcome	method	nsnp	b	se	pval	OR	OR_lci95	OR_uci95
EAF difference <= 0.10	bin_Naive/Immature B Cell_EBPL	EC	Wald ratio	1	-0.271	0.182	0.137	0.763	0.534	1.090
EAF difference <= 0.20	bin_Naive/Immature B Cell_EBPL	EC	Wald ratio	1	-0.271	0.182	0.137	0.763	0.534	1.090
EAS LD clumping	bin_Naive/Immature B Cell_EBPL	EC	Wald ratio	1	-0.271	0.182	0.137	0.763	0.534	1.090
EAS LD clumping + EAF difference <= 0.20	bin_Naive/Immature B Cell_EBPL	EC	Wald ratio	1	-0.271	0.182	0.137	0.763	0.534	1.090
Original	bin_Naive/Immature B Cell_EBPL	EC	Inverse variance weighted	2	-0.324	0.165	0.050	0.723	0.523	1.000
EAF difference <= 0.10	bin_Naive/Immature B Cell_HLA-DQA2	EC	Inverse variance weighted	3	0.289	0.153	0.059	1.335	0.988	1.804
EAF difference <= 0.20	bin_Naive/Immature B Cell_HLA-DQA2	EC	Inverse variance weighted	5	0.224	0.121	0.065	1.251	0.986	1.586
EAS LD clumping	bin_Naive/Immature B Cell_HLA-DQA2	EC	Inverse variance weighted	2	0.098	0.057	0.085	1.102	0.987	1.232
EAS LD clumping + EAF difference <= 0.20	bin_Naive/Immature B Cell_HLA-DQA2	EC	Wald ratio	1	0.327	0.203	0.106	1.387	0.932	2.063
Original	bin_Naive/Immature B Cell_HLA-DQA2	EC	Inverse variance weighted	6	0.104	0.046	0.024	1.109	1.013	1.215
EAF difference <= 0.10	bin_Naive/Immature B Cell_WARS	EC	Wald ratio	1	-0.169	0.093	0.070	0.845	0.704	1.014
EAF difference <= 0.20	bin_Naive/Immature B Cell_WARS	EC	Inverse variance weighted	2	-0.192	0.087	0.027	0.826	0.696	0.979
EAS LD clumping	bin_Naive/Immature B Cell_WARS	EC	Inverse variance weighted	2	-0.192	0.087	0.027	0.826	0.696	0.979
EAS LD clumping + EAF difference <= 0.20	bin_Naive/Immature B Cell_WARS	EC	Inverse variance weighted	2	-0.192	0.087	0.027	0.826	0.696	0.979
Original	bin_Naive/Immature B Cell_WARS	EC	Inverse variance weighted	2	-0.192	0.087	0.027	0.826	0.696	0.979
EAF difference <= 0.10	cd4et_CD4 Effector memory/TEMRA_TM258	EC	Wald ratio	1	-0.335	0.174	0.054	0.716	0.509	1.006
EAF difference <= 0.20	cd4et_CD4 Effector memory/TEMRA_TM258	EC	Wald ratio	1	-0.335	0.174	0.054	0.716	0.509	1.006
EAS LD clumping	cd4et_CD4 Effector memory/TEMRA_TM258	EC	Wald ratio	1	-0.335	0.174	0.054	0.716	0.509	1.006
EAS LD clumping + EAF difference <= 0.20	cd4et_CD4 Effector memory/TEMRA_TM258	EC	Wald ratio	1	-0.335	0.174	0.054	0.716	0.509	1.006
Original	cd4et_CD4 Effector memory/TEMRA_TM258	EC	Inverse variance weighted	2	-0.314	0.144	0.029	0.730	0.551	0.968
EAF difference <= 0.10	cd4nc_CD4 Naive/Central memory T cell_MAST4	EC	Wald ratio	1	0.362	0.271	0.181	1.436	0.845	2.442
EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_MAST4	EC	Inverse variance weighted	2	0.428	0.201	0.033	1.533	1.034	2.273
EAS LD clumping	cd4nc_CD4 Naive/Central memory T cell_MAST4	EC	Wald ratio	1	0.362	0.271	0.181	1.436	0.845	2.442
EAS LD clumping + EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_MAST4	EC	Wald ratio	1	0.362	0.271	0.181	1.436	0.845	2.442
Original	cd4nc_CD4 Naive/Central memory T cell_MAST4	EC	Inverse variance weighted	2	0.428	0.201	0.033	1.533	1.034	2.273
EAF difference <= 0.10	cd4nc_CD4 Naive/Central memory T cell_POLR1D	EC	Inverse variance weighted	2	-0.228	0.116	0.049	0.796	0.635	0.999
EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_POLR1D	EC	Inverse variance weighted	2	-0.228	0.116	0.049	0.796	0.635	0.999
EAS LD clumping	cd4nc_CD4 Naive/Central memory T cell_POLR1D	EC	Wald ratio	1	-0.244	0.128	0.055	0.783	0.610	1.006
EAS LD clumping + EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_POLR1D	EC	Wald ratio	1	-0.244	0.128	0.055	0.783	0.610	1.006
Original	cd4nc_CD4 Naive/Central memory T cell_POLR1D	EC	Inverse variance weighted	2	-0.228	0.116	0.049	0.796	0.635	0.999
EAF difference <= 0.10	cd4nc_CD4 Naive/Central memory T cell_TNFSF13B	EC	Wald ratio	1	0.156	0.391	0.689	1.169	0.544	2.515
EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_TNFSF13B	EC	Wald ratio	1	0.156	0.391	0.689	1.169	0.544	2.515
EAS LD clumping	cd4nc_CD4 Naive/Central memory T cell_TNFSF13B	EC	Inverse variance weighted	2	0.241	0.123	0.049	1.273	1.001	1.619
EAS LD clumping + EAF difference <= 0.20	cd4nc_CD4 Naive/Central memory T cell_TNFSF13B	EC	Wald ratio	1	0.156	0.391	0.689	1.169	0.544	2.515
Original	cd4nc_CD4 Naive/Central memory T cell_TNFSF13B	EC	Inverse variance weighted	2	0.241	0.123	0.049	1.273	1.001	1.619
EAF difference <= 0.10	cd4sox4_CD4 SOX4 T cell_HLA-DRB5	EC	Wald ratio	1	-0.349	0.209	0.095	0.705	0.468	1.063
EAF difference <= 0.20	cd4sox4_CD4 SOX4 T cell_HLA-DRB5	EC	Inverse variance weighted	2	-0.332	0.145	0.022	0.717	0.539	0.954
EAS LD clumping	cd4sox4_CD4 SOX4 T cell_HLA-DRB5	EC	Wald ratio	1	-0.316	0.202	0.118	0.729	0.490	1.084
EAS LD clumping + EAF difference <= 0.20	cd4sox4_CD4 SOX4 T cell_HLA-DRB5	EC	Wald ratio	1	-0.316	0.202	0.118	0.729	0.490	1.084
Original	cd4sox4_CD4 SOX4 T cell_HLA-DRB5	EC	Inverse variance weighted	2	-0.332	0.145	0.022	0.717	0.539	0.954
EAF difference <= 0.10	cd8et_CD8 Effector memory_FBXO2	EC	Wald ratio	1	0.511	0.569	0.369	1.668	0.546	5.091
EAF difference <= 0.20	cd8et_CD8 Effector memory_FBXO2	EC	Inverse variance weighted	2	0.586	0.276	0.034	1.796	1.046	3.086
EAS LD clumping	cd8et_CD8 Effector memory_FBXO2	EC	Inverse variance weighted	2	0.586	0.276	0.034	1.796	1.046	3.086
EAS LD clumping + EAF difference <= 0.20	cd8et_CD8 Effector memory_FBXO2	EC	Inverse variance weighted	2	0.586	0.276	0.034	1.796	1.046	3.086

Original	cd8et_CD8 Effector memory_FBXO2	EC	Inverse variance weighted	2	0.586	0.276	0.034	1.796	1.046	3.086
EAF difference <= 0.10	cd8et_CD8 Effector memory_HLA-DQA1	EC	Inverse variance weighted	3	0.225	0.200	0.258	1.253	0.847	1.852
EAF difference <= 0.20	cd8et_CD8 Effector memory_HLA-DQA1	EC	Inverse variance weighted	3	0.225	0.200	0.258	1.253	0.847	1.852
EAS LD clumping	cd8et_CD8 Effector memory_HLA-DQA1	EC	Inverse variance weighted	3	0.123	0.074	0.097	1.131	0.978	1.307
EAS LD clumping + EAF difference <= 0.20	cd8et_CD8 Effector memory_HLA-DQA1	EC	Inverse variance weighted	2	-0.029	0.260	0.910	0.971	0.584	1.616
Original	cd8et_CD8 Effector memory_HLA-DQA1	EC	Inverse variance weighted	4	0.150	0.071	0.035	1.162	1.011	1.335
EAF difference <= 0.20	cd8et_CD8 Effector memory_SLC25A29	EC	Wald ratio	1	0.155	0.080	0.053	1.168	0.998	1.366
EAS LD clumping	cd8et_CD8 Effector memory_SLC25A29	EC	Inverse variance weighted	2	0.156	0.076	0.041	1.169	1.006	1.358
EAS LD clumping + EAF difference <= 0.20	cd8et_CD8 Effector memory_SLC25A29	EC	Wald ratio	1	0.155	0.080	0.053	1.168	0.998	1.366
Original	cd8et_CD8 Effector memory_SLC25A29	EC	Inverse variance weighted	2	0.156	0.076	0.041	1.169	1.006	1.358
EAF difference <= 0.10	cd8nc_CD8 Naive/Central memory T cell_PARP14	EC	Wald ratio	1	-0.482	0.340	0.156	0.618	0.318	1.202
EAF difference <= 0.20	cd8nc_CD8 Naive/Central memory T cell_PARP14	EC	Wald ratio	1	-0.482	0.340	0.156	0.618	0.318	1.202
EAS LD clumping	cd8nc_CD8 Naive/Central memory T cell_PARP14	EC	Wald ratio	1	-0.482	0.340	0.156	0.618	0.318	1.202
EAS LD clumping + EAF difference <= 0.20	cd8nc_CD8 Naive/Central memory T cell_PARP14	EC	Wald ratio	1	-0.482	0.340	0.156	0.618	0.318	1.202
Original	cd8nc_CD8 Naive/Central memory T cell_PARP14	EC	Inverse variance weighted	2	-0.426	0.207	0.039	0.653	0.436	0.979
EAF difference <= 0.10	cd8s100b_CD8 S100B T cell_ZBTB9	EC	Wald ratio	1	-0.122	0.287	0.671	0.885	0.505	1.553
EAF difference <= 0.20	cd8s100b_CD8 S100B T cell_ZBTB9	EC	Inverse variance weighted	2	-0.228	0.152	0.132	0.796	0.591	1.071
EAS LD clumping	cd8s100b_CD8 S100B T cell_ZBTB9	EC	Inverse variance weighted	3	-0.258	0.120	0.033	0.773	0.610	0.979
EAS LD clumping + EAF difference <= 0.20	cd8s100b_CD8 S100B T cell_ZBTB9	EC	Inverse variance weighted	2	-0.228	0.152	0.132	0.796	0.591	1.071
Original	cd8s100b_CD8 S100B T cell_ZBTB9	EC	Inverse variance weighted	3	-0.258	0.120	0.033	0.773	0.610	0.979
EAF difference <= 0.20	dc_Dendritic Cell_AGER	EC	Wald ratio	1	-0.285	0.163	0.080	0.752	0.546	1.035
EAS LD clumping	dc_Dendritic Cell_AGER	EC	Inverse variance weighted	2	-0.289	0.128	0.024	0.749	0.582	0.963
EAS LD clumping + EAF difference <= 0.20	dc_Dendritic Cell_AGER	EC	Wald ratio	1	-0.285	0.163	0.080	0.752	0.546	1.035
Original	dc_Dendritic Cell_AGER	EC	Inverse variance weighted	2	-0.289	0.128	0.024	0.749	0.582	0.963
EAF difference <= 0.10	dc_Dendritic Cell_APOM	EC	Inverse variance weighted	2	0.117	0.182	0.521	1.124	0.787	1.606
EAF difference <= 0.20	dc_Dendritic Cell_APOM	EC	Inverse variance weighted	5	0.211	0.108	0.050	1.235	1.000	1.525
EAS LD clumping	dc_Dendritic Cell_APOM	EC	Wald ratio	1	0.341	0.217	0.116	1.406	0.920	2.150
EAS LD clumping + EAF difference <= 0.20	dc_Dendritic Cell_APOM	EC	Wald ratio	1	0.341	0.217	0.116	1.406	0.920	2.150
Original	dc_Dendritic Cell_APOM	EC	Inverse variance weighted	5	0.211	0.108	0.050	1.235	1.000	1.525
EAF difference <= 0.20	nk_Natural Killer Cell EIF2A	EC	Wald ratio	1	0.715	0.473	0.130	2.044	0.809	5.164
EAS LD clumping	nk_Natural Killer Cell EIF2A	EC	Wald ratio	1	0.362	0.201	0.072	1.436	0.968	2.131
Original	nk_Natural Killer Cell EIF2A	EC	Inverse variance weighted	2	0.416	0.185	0.025	1.516	1.055	2.180
EAF difference <= 0.20	nk_Natural Killer Cell_SLC25A29	EC	Inverse variance weighted	2	0.158	0.078	0.042	1.171	1.006	1.364
EAS LD clumping	nk_Natural Killer Cell_SLC25A29	EC	Inverse variance weighted	2	0.158	0.078	0.042	1.171	1.006	1.364
EAS LD clumping + EAF difference <= 0.20	nk_Natural Killer Cell_SLC25A29	EC	Inverse variance weighted	2	0.158	0.078	0.042	1.171	1.006	1.364
Original	nk_Natural Killer Cell_SLC25A29	EC	Inverse variance weighted	2	0.158	0.078	0.042	1.171	1.006	1.364
EAF difference <= 0.10	nkr_Natural Killer Recruiting Cell_HLA-DQA2	EC	Inverse variance weighted	2	0.182	0.138	0.188	1.200	0.915	1.574
EAF difference <= 0.20	nkr_Natural Killer Recruiting Cell_HLA-DQA2	EC	Inverse variance weighted	2	0.182	0.138	0.188	1.200	0.915	1.574
EAS LD clumping	nkr_Natural Killer Recruiting Cell_HLA-DQA2	EC	Inverse variance weighted	2	0.179	0.110	0.101	1.197	0.965	1.483
EAS LD clumping + EAF difference <= 0.20	nkr_Natural Killer Recruiting Cell_HLA-DQA2	EC	Wald ratio	1	0.047	0.226	0.834	1.048	0.673	1.634
Original	nkr_Natural Killer Recruiting Cell_HLA-DQA2	EC	Inverse variance weighted	3	0.203	0.093	0.029	1.225	1.021	1.470