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Supplemental information

Integrative polygenic risk score improves the prediction accuracy of complex traits and diseases

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Supplementary Information

Integrative polygenic risk score improves prediction accuracy of complex traits and diseases

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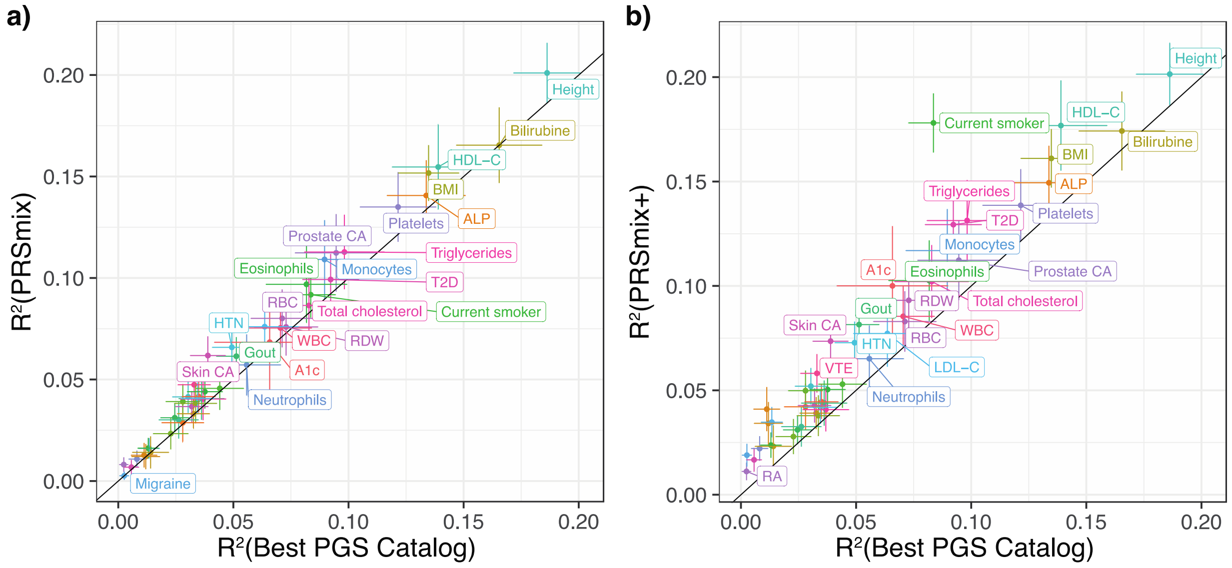
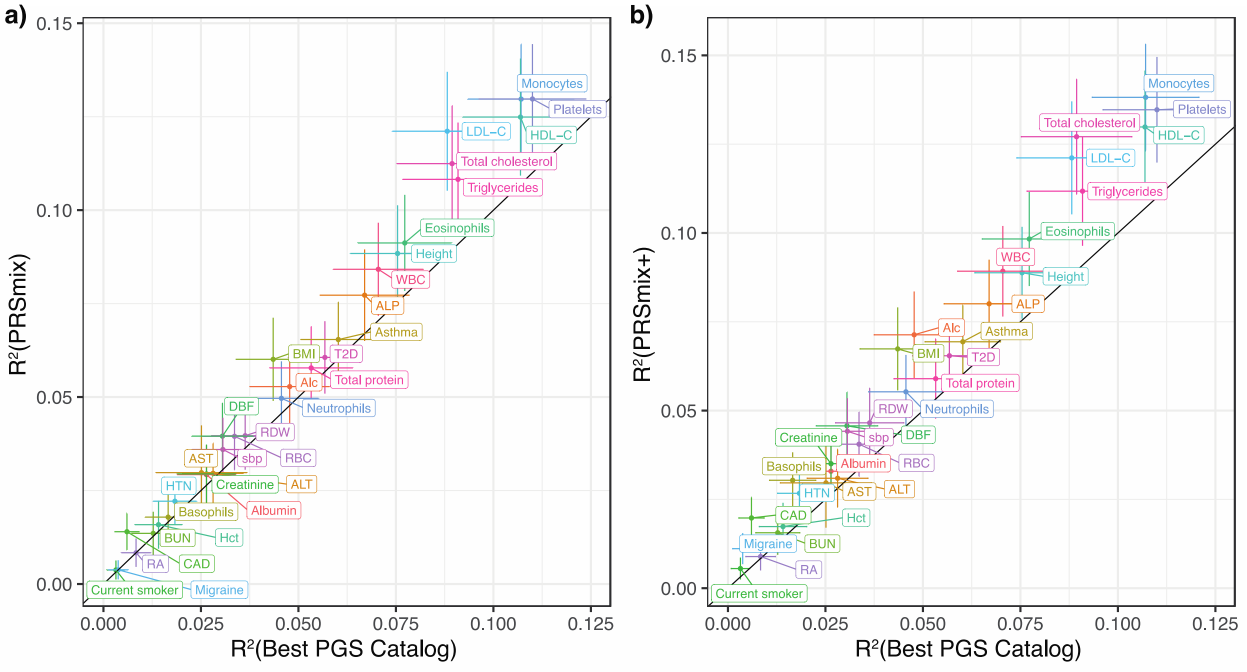
Supplementary Figure 1. Prediction accuracy of the best PGS catalog versus PRSmix and PRSmix+ for 47 traits in the European ancestry, related to Figure 3.

The prediction accuracies of the best PGS Catalog are displayed on the x-axis versus PRSmix **(a)** and PRSmix+ **(b)** on the y-axis. The prediction accuracies are estimated as incremental R2 and liability R2 for continuous traits and binary traits, respectively. The points represent the mean prediction and the whiskers demonstrate 95% confidence intervals. The black line represents the reference that the prediction accuracy of PGS Catalog is equal to PRSmix and PRSmix+.



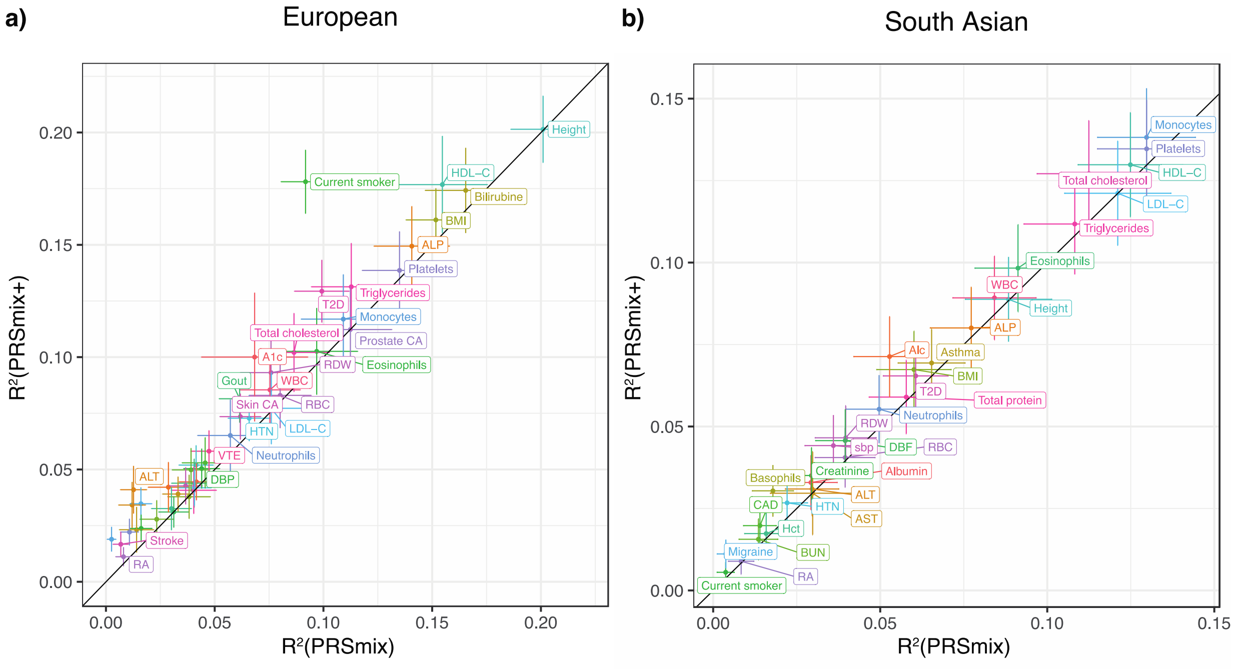
Supplementary Figure 2. Prediction accuracy of the best PGS catalog versus PRSmix and PRSmix+ for 32 traits in the South Asian ancestry, related to Figure 3.

The prediction accuracies of the best PGS Catalog are displayed on the x-axis versus PRSmix **(a)** and PRSmix+ **(b)** on the y-axis. The prediction accuracies are estimated as incremental R2 and liability R2 for continuous traits and binary traits, respectively. The points represent the mean prediction and the whiskers demonstrate 95% confidence intervals. The black line represents the reference that the prediction accuracy of PGS Catalog is equal to PRSmix and PRSmix+.



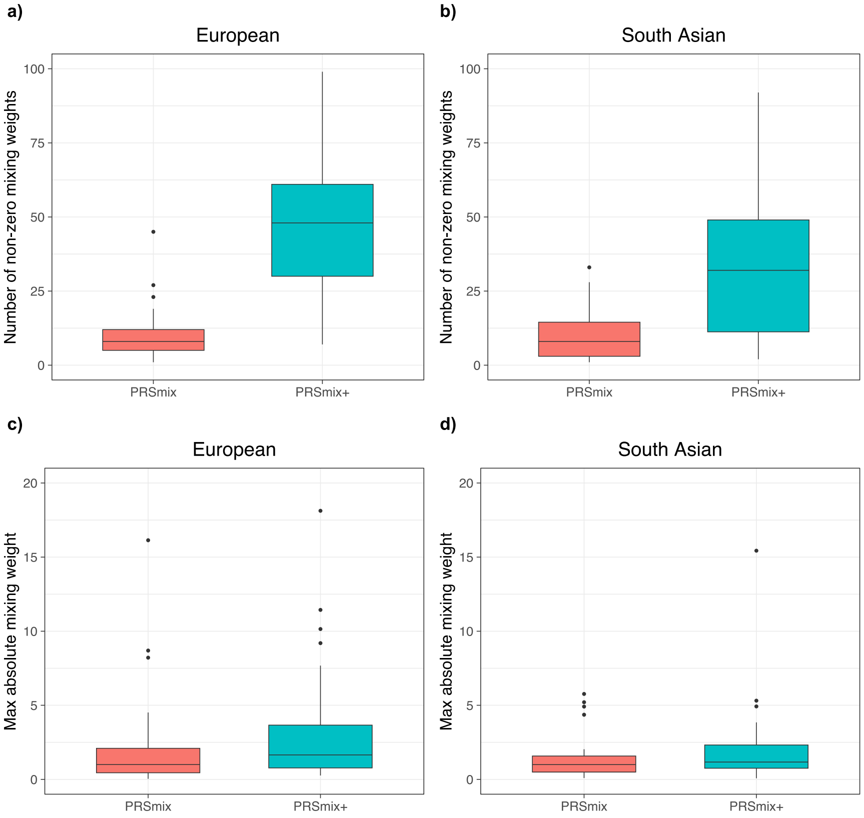
Supplementary Figure 3. Prediction accuracy of the PRSmix versus PRSmix+ in the European and South Asian ancestries, related to Figure 3.

The prediction accuracies of the PRSmix are displayed on the x-axis versus PRSmix+ on the y-axis in **a)** European ancestry and **b)** South Asian ancestry. The prediction accuracies are estimated as incremental R2 and liability R2 for continuous traits and binary traits, respectively. The points represent the mean prediction and the whiskers demonstrate 95% confidence intervals. The black line represents the reference that the prediction accuracy of PGS Catalog is equal to PRSmix and PRSmix+.



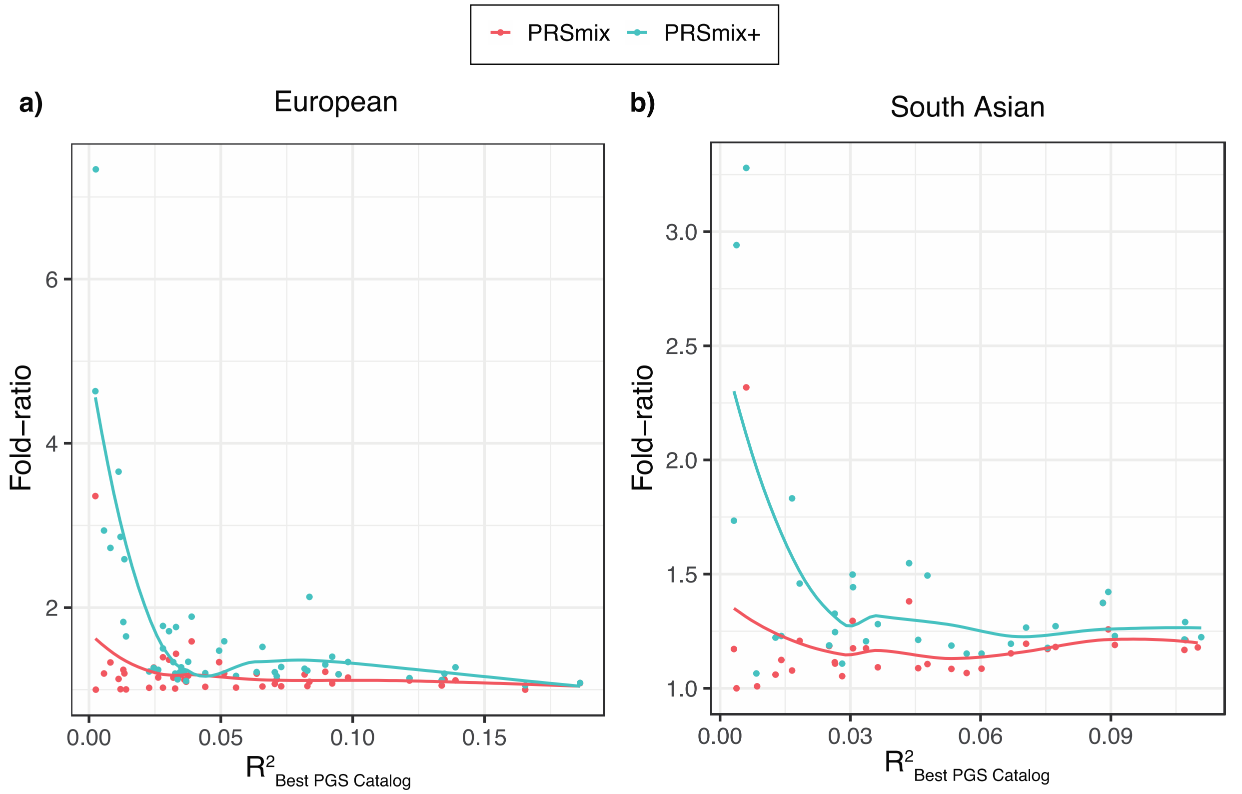
Supplementary Figure 4. The number of non-zero mixing weight and the max absolute mixing weights for PRSmix and PRSmix+ in European and South Asian ancestries, related to Figure 3.

The number of non-zero mixing weights are displayed for 47 traits in European ancestry (a) and 32 traits in South Asian ancestry (b). The max absolute mixing weights are showed for European ancestry (c) and South Asian ancestry (d). The boxplots show the first to the third quartile of prediction accuracies for 47 traits and 32 traits in European and South Asian ancestries, respectively. The whiskers reflect the maximum and minimum values within the 1.5 × interquartile range for each group

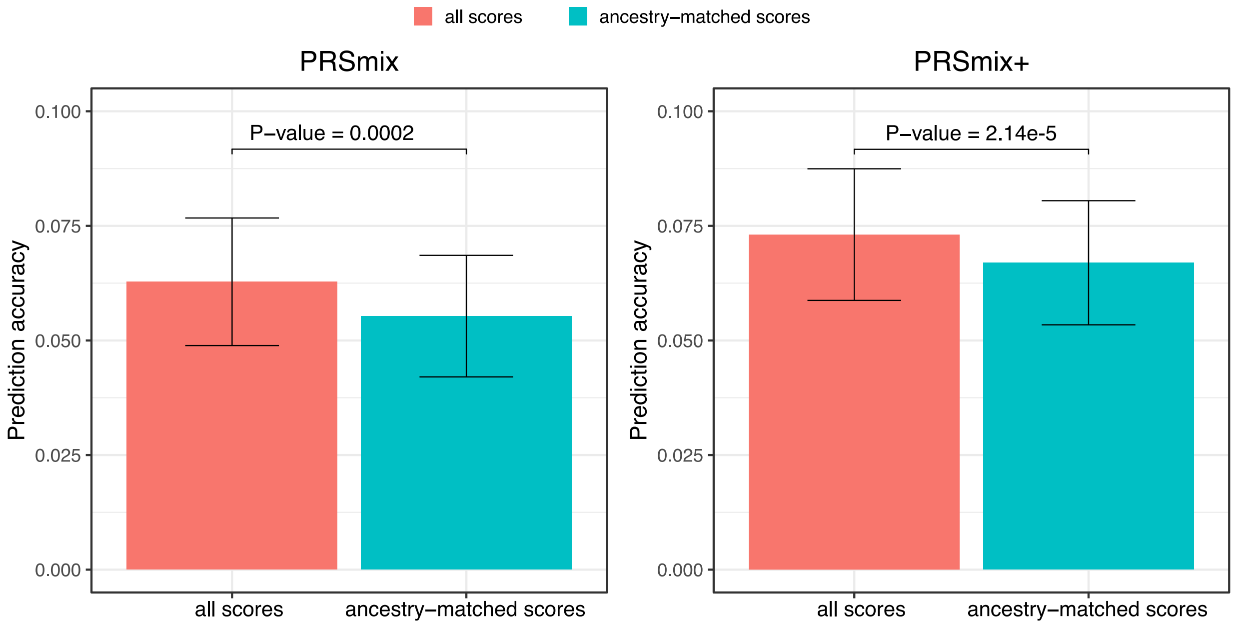


Supplementary Figure 5. Predictive improvement of PRSmix and PRSmix+ in European and South Asian ancestries, related to Figure 3.

The prediction accuracies of the best PGS Catalog are displayed on the x-axis versus ratio of R^2_{PRSmix} and $R^2_{\text{PRSmix+}}$ on the y-axis. The prediction accuracies are estimated as incremental R2 and liability R2 for continuous traits and binary traits, respectively. The red and blue line represents the local regression line for improvement of PRSmix and PRSmix+ over the best PGS Catalog, respectively.

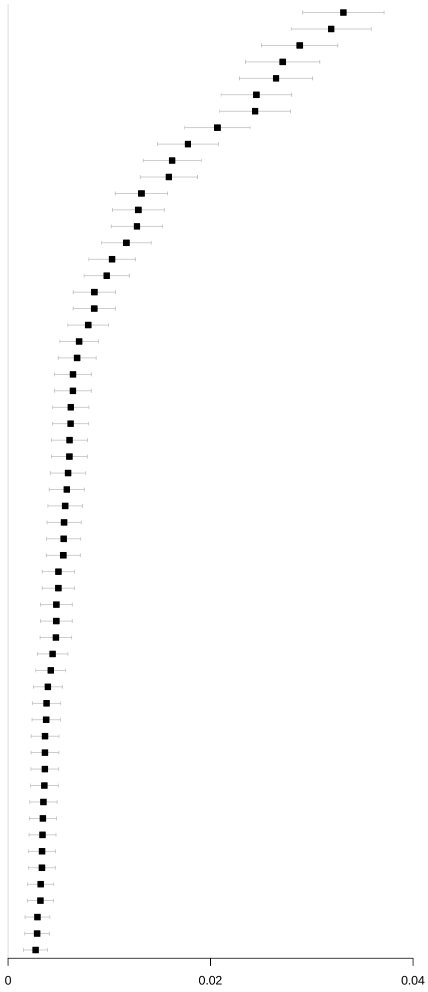


Supplementary Figure 6. Prediction accuracy of PRSmix and PRSmix+ in European using all scores or ancestry-matched scores to the target population, related to Figure 3.
The prediction accuracies using all scores and ancestry-matched scores are displayed on the x-axis. The ancestry-matched scores were chosen by scores with percentage of ancestry 100% matched with the target ancestry. Due to athe limited number of 100%-South Asian-scores in the PGS Catalog, we only conducted the analyses with European ancestry. The prediction accuracies are estimated as incremental R2 and liability R2 for continuous traits and binary traits, respectively. The bars represent the mean prediction accuracy across 47 traits and the whiskers indicate 95% confidence interval.



Supplementary Figure 7. Prediction accuracy in the training set of the contributing PGSs to PRSmix+ of coronary artery disease in the European ancestry, related to Figure 6.

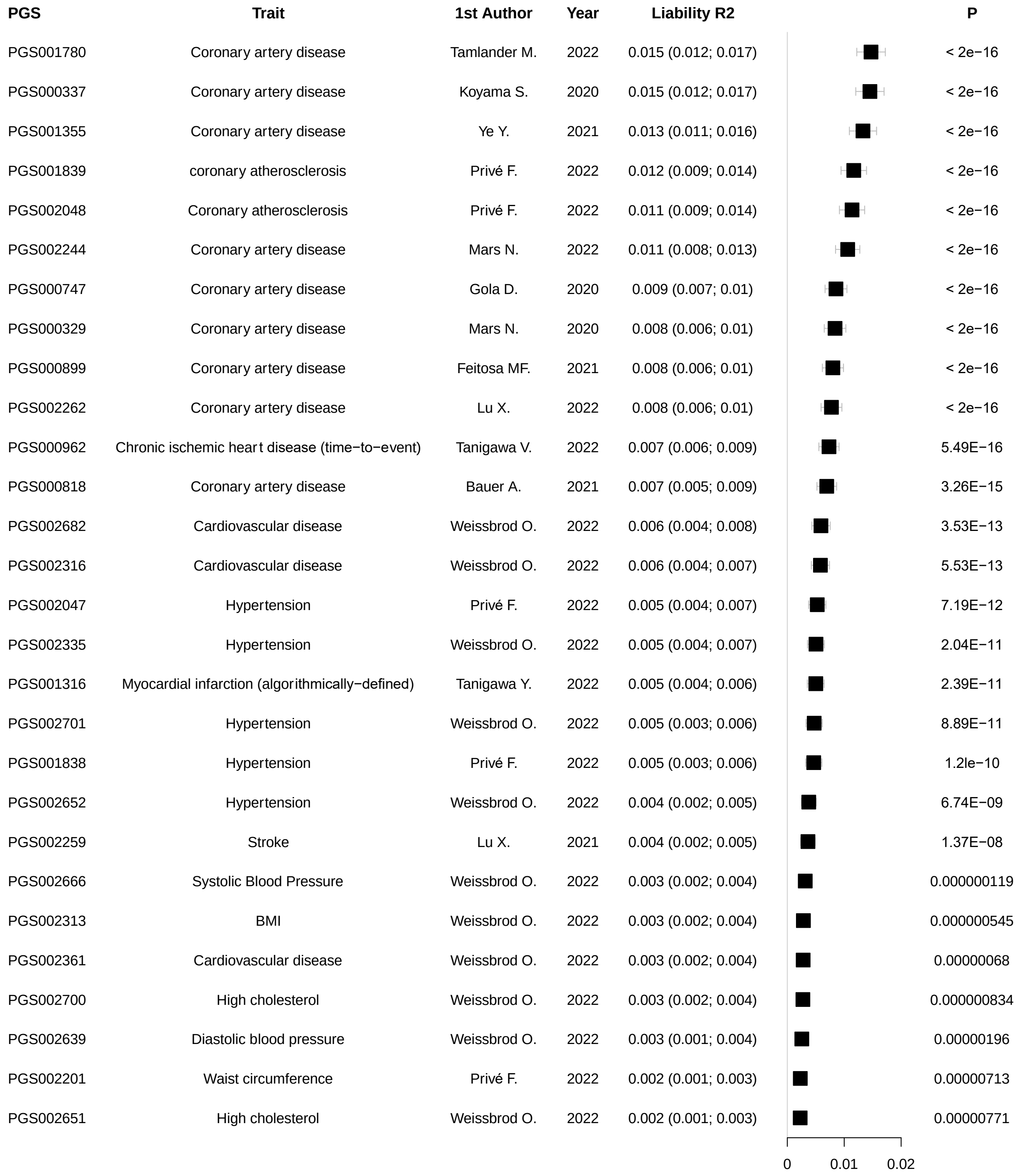
We used Elastic Net to estimate the mixing weights of multiple PGS and report the contributing PGS with non-zero effects. Prediction accuracy was estimated with liability R2. The boxes represent the mean prediction accuracy across the traits in that group and the whiskers demonstrate 95% confidence intervals.



PGS	Trait	1st Author	Year	Liability R2	P
PGS000337	Coronary artery disease	Koyama S.	2020	0.033 (0.029; 0.037)	< 2e−16
PGS002048	Coronary atherosclerosis	Privé F.	2022	0.032 (0.028; 0.036)	< 2e−16
PGS001839	Coronary atherosclerosis	Privé F.	2022	0.029 (0.025; 0.033)	< 2e−16
PGS000329	Coronary artery disease	Mars N.	2020	0.027 (0.023; 0.031)	< 2e−16
PGS001355	Coronary artery disease	Ye Y.	2021	0.026 (0.023; 0.03)	< 2e−16
PGS000018	Coronary artery disease	Inouye M.	2018	0.025 (0.021; 0.028)	< 2e−16
PGS001780	Coronary artery disease	Tamlander M.	2022	0.024 (0.021; 0.028)	< 2e−16
PGS000058	Coronary artery disease	Morieri ML.	2018	0.021 (0.017; 0.024)	< 2e−16
PGS002047	Hypertension	Privé F.	2022	0.018 (0.015; 0.021)	< 2e−16
PGS001838	Hypertension	Privé F.	2022	0.016 (0.013; 0.019)	< 2e−16
PGS001821	Disorders of lipoid metabolism	Privé F.	2022	0.016 (0.013; 0.019)	< 2e−16
PGS000710	Myocardial infarction	Sinnott−Armstrong N.	2021	0.013 (0.011; 0.016)	< 2e−16
PGS000747	Coronary artery disease	Gola D.	2020	0.013 (0.01; 0.015)	< 2e−16
PGS000319	All−cause mortality (male)	Meisner A.	2020	0.013 (0.01; 0.015)	< 2e−16
PGS000012	Coronary artery disease	Abraham G.	2016	0.012 (0.009; 0.014)	< 2e−16
PGS000706	Hypertension	Sinnott−Armstrong N.	2021	0.01 (0.008; 0.013)	< 2e−16
PGS001003	Number of medications taken	Tanigawa Y.	2022	0.01 (0.008; 0.012)	< 2e−16
PGS001943	Body mass index (BMI)	Privé F.	2022	0.009 (0.006; 0.011)	9.99e−16
PGS000039	Ischaemic stroke	Abraham G.	2019	0.009 (0.006; 0.011)	1.05e−15
PGS001983	Waist circumference	Privé F.	2022	0.008 (0.006; 0.01)	1.05e−14
PGS002695	HDL Cholesterol	Weissbrod O.	2022	0.007 (0.005; 0.009)	3.55e−13
PGS002651	High cholesterol	Weissbrod O.	2022	0.007 (0.005; 0.009)	7.62e−13
PGS001227	Waist circumference	Tanigawa Y.	2022	0.006 (0.005; 0.008)	3.78e−12
PGS001103	Body fat percentage (left leg)	Tanigawa Y.	2022	0.006 (0.005; 0.008)	3.88e−12
PGS000686	HDL cholesterol [mmol/L]	Sinnott−Armstrong N.	2021	0.006 (0.004; 0.008)	8.69e−12
PGS001790	Heart Failure	Wang Y.	2021	0.006 (0.004; 0.008)	9.18e−12
PGS002639	Diastolic blood pressure	Weissbrod O.	2022	0.006 (0.004; 0.008)	1.41e−11
PGS001979	Triglycerides	Privé F.	2022	0.006 (0.004; 0.008)	1.48e−11
PGS002685	College education	Weissbrod O.	2022	0.006 (0.004; 0.008)	2.45e−11
PGS000864	Type 2 diabetes	Aly DM.	2021	0.006 (0.004; 0.008)	4.03e−11
PGS002630	BMI	Weissbrod O.	2022	0.006 (0.004; 0.007)	7.56e−11
PGS002690	Endocrine and diabetes diseases	Weissbrod O.	2022	0.006 (0.004; 0.007)	1.15e−10
PGS002139	Time spent watching television (TV) or using computer	Privé F.	2022	0.005 (0.004; 0.007)	1.33e−10
PGS001781	Type 2 diabetes	Tamlander M.	2022	0.005 (0.004; 0.007)	1.54e−10
PGS001798	Stroke	Wang Y.	2021	0.005 (0.003; 0.007)	1.00e−09
PGS001793	Stroke	Wang Y.	2021	0.005 (0.003; 0.007)	1.02e−09
PGS002096	Abdominal pain	Privé F.	2022	0.005 (0.003; 0.006)	2.19e−09
PGS002646	HDL Cholesterol	Weissbrod O.	2022	0.005 (0.003; 0.006)	2.28e−09
PGS002152	Alcohol intake frequency	Privé F.	2022	0.005 (0.003; 0.006)	2.63e−09
PGS002156	Age first had sexual intercourse	Privé F.	2022	0.004 (0.003; 0.006)	9.30e−09
PGS002037	Tobacco use disorder	Privé F.	2022	0.004 (0.003; 0.006)	1.87e−08
PGS001075	Usual walking pace	Tanigawa Y.	2022	0.004 (0.003; 0.005)	5.85e−08
PGS000689	Lipoprotein A [nmol/L]	Sinnott−Armstrong N.	2021	0.004 (0.002; 0.005)	9.48e−08
PGS002670	Triglycerides	Weissbrod O.	2022	0.004 (0.002; 0.005)	1.10e−07
PGS002489	College education	Weissbrod O.	2022	0.004 (0.002; 0.005)	1.72e−07
PGS001976	Reticulocyte count	Privé F.	2022	0.004 (0.002; 0.005)	1.79e−07
PGS002636	College education	Weissbrod O.	2022	0.004 (0.002; 0.005)	1.81e−07
PGS001063	Major dietary changes in the last 5 years due to illness	Tanigawa Y.	2022	0.004 (0.002; 0.005)	2.23e−07
PGS002501	HbA1c	Weissbrod O.	2022	0.003 (0.002; 0.005)	3.18e−07
PGS002654	LDL Cholesterol	Weissbrod O.	2022	0.003 (0.002; 0.005)	3.94e−07
PGS002328	Glucose	Weissbrod O.	2022	0.003 (0.002; 0.005)	4.54e−07
PGS002770	Stroke	Mars N.	2022	0.003 (0.002; 0.005)	5.47e−07
PGS000707	Cholecystitis	Sinnott−Armstrong N.	2021	0.003 (0.002; 0.005)	5.68e−07
PGS000808	Type 2 diabetes	Polfus LM.	2021	0.003 (0.002; 0.005)	9.13e−07
PGS002714	Smoking status	Weissbrod O.	2022	0.003 (0.002; 0.004)	1.02e−06
PGS002641	Endocrine and diabetes diseases	Weissbrod O.	2022	0.003 (0.002; 0.004)	3.19e−06
PGS000708	Kidney failure	Sinnott−Armstrong N.	2021	0.003 (0.002; 0.004)	3.65e−06
PGS000806	Type 2 diabetes	Polfus LM.	2021	0.003 (0.002; 0.004)	6.64e−06

Supplementary Figure 8. Prediction accuracy in the training set of the contributing PGSs to PRSmix+ of coronary artery disease in the South Asian ancestry, related to Figure 6.

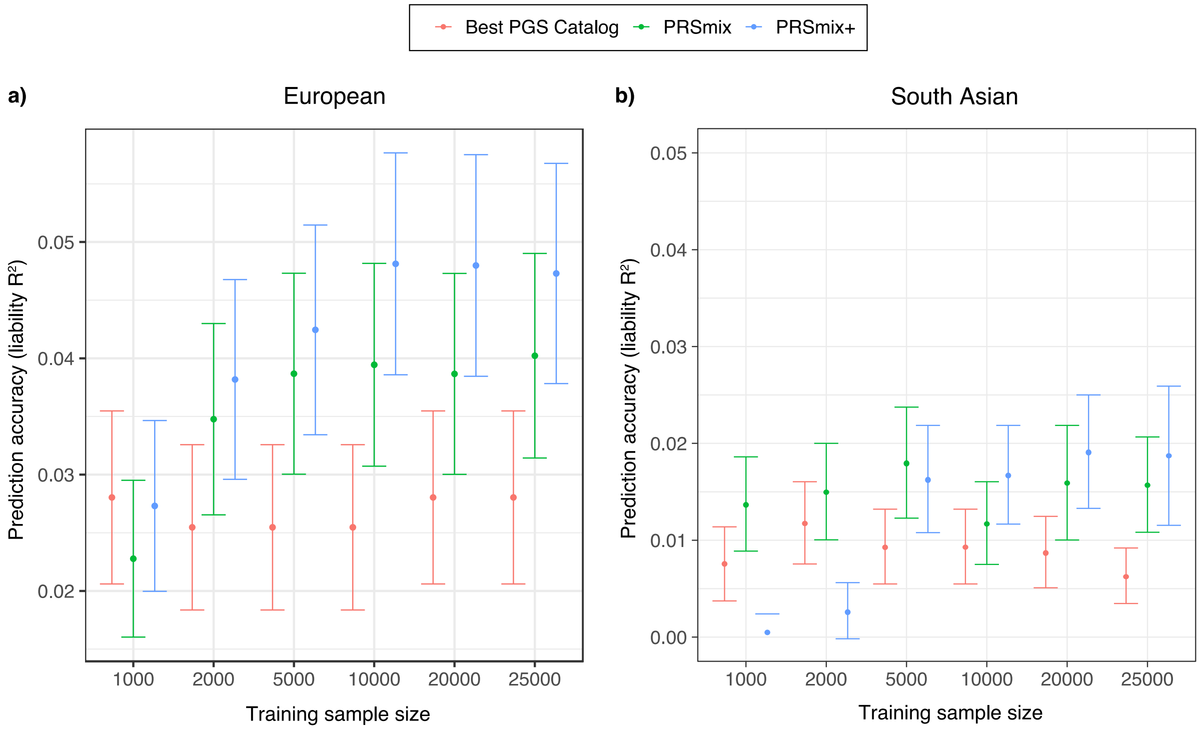
We used Elastic Net to estimate the mixing weights of multiple PGS and report the contributing PGS with non-zero effects. Prediction accuracy was estimated with liability R2. The boxes represent the mean prediction accuracy across the traits in that group and the whiskers demonstrate 95% confidence intervals.



PGS	Trait	1st Author	Year	Liability R2	P
PGS001780	Coronary artery disease	Tamlander M.	2022	0.015 (0.012; 0.017)	< 2e−16
PGS000337	Coronary artery disease	Koyama S.	2020	0.015 (0.012; 0.017)	< 2e−16
PGS001355	Coronary artery disease	Ye Y.	2021	0.013 (0.011; 0.016)	< 2e−16
PGS001839	coronary atherosclerosis	Privé F.	2022	0.012 (0.009; 0.014)	< 2e−16
PGS002048	Coronary atherosclerosis	Privé F.	2022	0.011 (0.009; 0.014)	< 2e−16
PGS002244	Coronary artery disease	Mars N.	2022	0.011 (0.008; 0.013)	< 2e−16
PGS000747	Coronary artery disease	Gola D.	2020	0.009 (0.007; 0.01)	< 2e−16
PGS000329	Coronary artery disease	Mars N.	2020	0.008 (0.006; 0.01)	< 2e−16
PGS000899	Coronary artery disease	Feitosa MF.	2021	0.008 (0.006; 0.01)	< 2e−16
PGS002262	Coronary artery disease	Lu X.	2022	0.008 (0.006; 0.01)	< 2e−16
PGS000962	Chronic ischemic heart disease (time−to−event)	Tanigawa V.	2022	0.007 (0.006; 0.009)	5.49E−16
PGS000818	Coronary artery disease	Bauer A.	2021	0.007 (0.005; 0.009)	3.26E−15
PGS002682	Cardiovascular disease	Weissbrod O.	2022	0.006 (0.004; 0.008)	3.53E−13
PGS002316	Cardiovascular disease	Weissbrod O.	2022	0.006 (0.004; 0.007)	5.53E−13
PGS002047	Hypertension	Privé F.	2022	0.005 (0.004; 0.007)	7.19E−12
PGS002335	Hypertension	Weissbrod O.	2022	0.005 (0.004; 0.007)	2.04E−11
PGS001316	Myocardial infarction (algorithmically−defined)	Tanigawa Y.	2022	0.005 (0.004; 0.006)	2.39E−11
PGS002701	Hypertension	Weissbrod O.	2022	0.005 (0.003; 0.006)	8.89E−11
PGS001838	Hypertension	Privé F.	2022	0.005 (0.003; 0.006)	1.2le−10
PGS002652	Hypertension	Weissbrod O.	2022	0.004 (0.002; 0.005)	6.74E−09
PGS002259	Stroke	Lu X.	2021	0.004 (0.002; 0.005)	1.37E−08
PGS002666	Systolic Blood Pressure	Weissbrod O.	2022	0.003 (0.002; 0.004)	0.000000119
PGS002313	BMI	Weissbrod O.	2022	0.003 (0.002; 0.004)	0.000000545
PGS002361	Cardiovascular disease	Weissbrod O.	2022	0.003 (0.002; 0.004)	0.00000068
PGS002700	High cholesterol	Weissbrod O.	2022	0.003 (0.002; 0.004)	0.000000834
PGS002639	Diastolic blood pressure	Weissbrod O.	2022	0.003 (0.001; 0.004)	0.00000196
PGS002201	Waist circumference	Privé F.	2022	0.002 (0.001; 0.003)	0.00000713
PGS002651	High cholesterol	Weissbrod O.	2022	0.002 (0.001; 0.003)	0.00000771

Supplementary Figure 9. Empirical prediction accuracy with various training sample sizes for linear combination for coronary artery disease in the European and South Asian ancestries, related to Figure 6 and 7.

We assessed the performance of PRSmix and PRSmix+ with various training sample sizes. The prediction accuracy was estimated as liability R2. The points represent the mean prediction accuracy and the whiskers demonstrate 95% confidence intervals.



Supplementary Figure 10. Contributing traits to PRSmix+ of stroke in the European ancestry, related to Figure 6 and 7.

We used Elastic Net to estimate the mixing weights of multiple PGS and report the top 80 contributing PGS with non-zero effects. Prediction accuracy was estimated with liability R2. The boxes represent the mean prediction accuracy across the traits in that group and the whiskers demonstrate 95% confidence intervals.

PGS	Trait	1st Author	Year	Liability R2	P
PGS001838	Hypertension	Privé F.	2022	0.009 (0.007; 0.011)	< 2e−16
PGS002047	Hypertension	Privé F.	2022	0.008 (0.006; 0.01)	2.98e−16
PGS002724	Ischemic stroke	Mishra A.	2022	0.006 (0.005; 0.008)	4.24e−13
PGS000957	Essential (primary hypertension) (time−to−event)	Tanigawa Y.	2022	0.006 (0.004; 0.007)	1.30e−11
PGS002114	Diastolic blood pressure, automated reading	Privé F.	2022	0.005 (0.004; 0.007)	3.20e−11
PGS002682	Cardiovascular disease	Weissbrod O.	2022	0.005 (0.004; 0.007)	3.81e−11
PGS001900	Diastolic blood pressure, automated reading	Privé F.	2022	0.005 (0.004; 0.007)	5.23e−11
PGS002059	Circulatory disease NEC	Privé F.	2022	0.005 (0.003; 0.006)	2.74e−10
PGS000706	Hypertension	Sinnott−Armstrong N.	2021	0.005 (0.003; 0.006)	5.02e−10
PGS002316	Cardiovascular disease	Weissbrod O.	2022	0.005 (0.003; 0.006)	8.59e−10
PGS000039	Ischaemic stroke	Abraham G.	2019	0.005 (0.003; 0.006)	1.23e−09
PGS001335	Vascular/heart problems diagnosed by doctor High BP	Tanigawa Y.	2022	0.004 (0.003; 0.006)	4.18e−09
PGS000958	Essential hypertension	Tanigawa Y.	2022	0.004 (0.003; 0.006)	5.38e−09
PGS002770	Stroke	Mars N.	2022	0.004 (0.003; 0.005)	1.11e−08
PGS001943	Body mass index (BMI)	Privé F.	2022	0.004 (0.003; 0.005)	1.60e−08
PGS001320	Hypertension	Tanigawa Y.	2022	0.004 (0.003; 0.005)	2.00e−08
PGS000729	Type 2 diabetes	Ritchie SC.	2021	0.004 (0.002; 0.005)	3.50e−08
PGS000330	Type 2 diabetes	Mars N.	2020	0.004 (0.002; 0.005)	3.51e−08
PGS002679	BMI	Weissbrod O.	2022	0.004 (0.002; 0.005)	8.46e−08
PGS001075	Usual walking pace	Tanigawa Y.	2022	0.003 (0.002; 0.005)	1.18e−07
PGS002033	Overweight, obesity and other hyperalimentation	Privé F.	2022	0.003 (0.002; 0.005)	1.32e−07
PGS001264	Deep vein thrombosis	Tanigawa Y.	2022	0.003 (0.002; 0.005)	1.65e−07
PGS002228	Systolic blood pressure, automated reading	Privé F.	2022	0.003 (0.002; 0.005)	2.27e−07
PGS000961	Phlebitis and thrombophlebitis (time−to−event)	Tanigawa Y.	2022	0.003 (0.002; 0.005)	2.29e−07
PGS001133	Diastolic BP (AR)	Tanigawa Y.	2022	0.003 (0.002; 0.005)	2.49e−07
PGS002630	BMI	Weissbrod O.	2022	0.003 (0.002; 0.005)	2.65e−07
PGS002486	Cardiovascular disease	Weissbrod O.	2022	0.003 (0.002; 0.004)	4.80e−07
PGS002765	Hypertension	Mars N.	2022	0.003 (0.002; 0.004)	5.15e−07
PGS001917	Body fat percentage	Privé F.	2022	0.003 (0.002; 0.004)	8.45e−07
PGS001134	Systolic BP (AR)	Tanigawa Y.	2022	0.003 (0.002; 0.004)	9.91e−07
PGS002437	Cardiovascular disease	Weissbrod O.	2022	0.003 (0.002; 0.004)	1.11e−06
PGS001280	PE (time−to−event)	Tanigawa Y.	2022	0.003 (0.002; 0.004)	1.48e−06
PGS002633	Cardiovascular disease	Weissbrod O.	2022	0.003 (0.002; 0.004)	1.48e−06
PGS000319	All−cause mortality (male)	Meisner A.	2020	0.003 (0.002; 0.004)	1.58e−06
PGS001277	PE +/− DVT	Tanigawa Y.	2022	0.003 (0.002; 0.004)	1.58e−06
PGS001228	Body mass index	Tanigawa Y.	2022	0.003 (0.002; 0.004)	1.73e−06
PGS000900	Systolic blood pressure (female)	Kauko A.	2021	0.003 (0.002; 0.004)	1.76e−06
PGS002259	Stroke	Lu X.	2021	0.003 (0.002; 0.004)	2.34e−06
PGS002715	Systolic Blood Pressure	Weissbrod O.	2022	0.003 (0.002; 0.004)	2.68e−06
PGS001004	Number of non−cancer illnesses	Tanigawa Y.	2022	0.003 (0.002; 0.004)	3.39e−06
PGS002324	Endocrine and diabetes diseases	Weissbrod O.	2022	0.003 (0.002; 0.004)	3.44e−06
PGS002201	Waist circumference	Privé F.	2022	0.003 (0.002; 0.004)	3.69e−06
PGS002090	Other arthropathies	Privé F.	2022	0.003 (0.001; 0.004)	4.60e−06
PGS001279	previously: Blood clot in the lung	Tanigawa Y.	2022	0.003 (0.001; 0.004)	4.88e−06
PGS000301	Systolic blood pressure	Xie T.	2020	0.003 (0.001; 0.004)	5.64e−06
PGS002308	Type 2 diabetes	Ge T.	2022	0.003 (0.001; 0.004)	5.74e−06
PGS000302	Diastolic blood pressure	Xie T.	2020	0.003 (0.001; 0.004)	6.91e−06
PGS002322	Diastolic blood pressure	Weissbrod O.	2022	0.002 (0.001; 0.003)	1.06e−05
PGS000112	Reticulocyte fraction of red cells	Xu Y.	2022	0.002 (0.001; 0.003)	1.12e−05
PGS002794	Venous thromboembolism	Xie J.	2022	0.002 (0.001; 0.003)	1.49e−05
PGS000095	High light scatter reticulocyte percentage of red cells	Xu Y.	2022	0.002 (0.001; 0.003)	1.52e−05
PGS000298	Body mass index	Xie T.	2020	0.002 (0.001; 0.003)	1.80e−05
PGS000320	Body mass index	Chami N.	2020	0.002 (0.001; 0.003)	1.96e−05
PGS000671	Apolipoprotein A [g/L]	Sinnott−Armstrong N.	2021	0.002 (0.001; 0.003)	2.07e−05
PGS002139	Time spent watching television (TV) or using computer	Privé F.	2022	0.002 (0.001; 0.003)	2.18e−05
PGS001839	Coronary atherosclerosis	Privé F.	2022	0.002 (0.001; 0.003)	2.25e−05
PGS002218	Overall health rating	Privé F.	2022	0.002 (0.001; 0.003)	2.29e−05
PGS000329	Coronary artery disease	Mars N.	2020	0.002 (0.001; 0.003)	2.51e−05
PGS001144	Arm fat mass (L)	Tanigawa Y.	2022	0.002 (0.001; 0.003)	2.74e−05
PGS002532	BMI	Weissbrod O.	2022	0.002 (0.001; 0.003)	2.81e−05
PGS001557	Volume of grey matter in Frontal Operculum Cortex (L)	Tanigawa Y.	2022	0.002 (0.001; 0.003)	3.34e−05
PGS000909	Headache	Campos AI.	2021	0.002 (0.001; 0.003)	3.64e−05
PGS000038	Stroke	Rutten−Jacobs LC.	2018	0.002 (0.001; 0.003)	4.00e−05
PGS000043	Venous thromboembolism	Klarin D.	2019	0.002 (0.001; 0.003)	4.35e−05
PGS001294	Non−insulin−dependent diabetes (time−to−event)	Tanigawa Y.	2022	0.002 (0.001; 0.003)	4.68e−05
PGS001790	Heart Failure	Wang Y.	2021	0.002 (0.001; 0.003)	4.78e−05
PGS002725	Ischemic stroke	Mishra A.	2022	0.002 (0.001; 0.003)	6.01e−05
PGS001796	Venous thromboembolism	Wang Y.	2021	0.002 (0.001; 0.003)	6.22e−05
PGS002225	Snoring	Privé F.	2022	0.002 (0.001; 0.003)	6.22e−05
PGS002138	Forced vital capacity (FVC), Best measure	Privé F.	2022	0.002 (0.001; 0.003)	6.24e−05
PGS001793	Stroke	Wang Y.	2021	0.002 (0.001; 0.003)	6.82e−05
PGS000111	Reticulocyte count	Xu Y.	2022	0.002 (0.001; 0.003)	6.84e−05
PGS000703	Angina	Sinnott−Armstrong N.	2021	0.002 (0.001; 0.003)	7.08e−05
PGS002489	College education	Weissbrod O.	2022	0.002 (0.001; 0.003)	8.31e−05
PGS000808	Type 2 diabetes	Polfus LM.	2021	0.002 (0.001; 0.003)	8.94e−05
PGS001781	Type 2 diabetes	Tamlander M.	2022	0.002 (0.001; 0.003)	9.36e−05
PGS000913	Systolic blood pressure	Vaura F.	2021	0.002 (0.001; 0.003)	0.000101
PGS001847	Circulatory disease NEC	Privé F.	2022	0.002 (0.001; 0.003)	0.000101
PGS002470	Systolic Blood Pressure	Weissbrod O.	2022	0.002 (0.001; 0.003)	0.000102
PGS000712	T2D (cases vs HbA1c filtered controls)	Sinnott−Armstrong N.	2021	0.002 (0.001; 0.003)	0.000110