Table S. 1 Imputation accuracy (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0–0.01]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.478 ± 0.051	0.629 ± 0.053	0.321 ± 0.046	0.471 ± 0.052	0.400 ± 0.045
JAPONICA	0.518 ± 0.048	0.658 ± 0.047	0.368 ± 0.048	0.497 ± 0.048	0.423 ± 0.044
UKB_WCSG	0.517 ± 0.040	0.669 ± 0.041	0.353 ± 0.038	0.528 ± 0.044	0.443 ± 0.039
CYTOSNP	0.567 ± 0.048	0.698 ± 0.045	0.366 ± 0.043	0.526 ± 0.044	0.428 ± 0.039
PMRA	0.536 ± 0.042	0.689 ± 0.041	0.364 ± 0.041	0.509 ± 0.042	0.417 ± 0.040
PMDA	0.551 ± 0.031	0.705 ± 0.030	0.351 ± 0.027	0.528 ± 0.031	0.425 ± 0.029
OMNI2.5	0.648 ± 0.048	0.760 ± 0.044	0.429 ± 0.045	0.592 ± 0.046	0.499 ± 0.043
OMNI5	0.682 ± 0.046	0.800 ± 0.044	0.461 ± 0.045	0.664 ± 0.047	0.564 ± 0.044
LPS_0.5	0.691 ± 0.051	0.785 ± 0.047	0.492 ± 0.049	0.633 ± 0.050	0.562 ± 0.048
LPS_0.75	0.715 ± 0.051	0.806 ± 0.047	0.528 ± 0.050	0.661 ± 0.051	0.598 ± 0.049
LPS_1.0	0.734 ± 0.050	0.821 ± 0.046	0.558 ± 0.050	0.686 ± 0.050	0.627 ± 0.048
LPS_1.25	0.748 ± 0.049	0.832 ± 0.045	0.581 ± 0.049	0.703 ± 0.049	0.650 ± 0.047
LPS_1.5	0.759 ± 0.048	0.841 ± 0.044	0.599 ± 0.048	0.717 ± 0.048	0.668 ± 0.047
LPS_2.0	0.776 ± 0.046	0.854 ± 0.042	0.629 ± 0.047	0.739 ± 0.047	0.696 ± 0.046

Table S. 2 Imputation accuracy (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0.01–0.05]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.683 ± 0.056	0.781 ± 0.048	0.646 ± 0.057	0.782 ± 0.052	0.677 ± 0.052
JAPONICA	0.736 ± 0.048	0.788 ± 0.043	0.711 ± 0.054	0.738 ± 0.050	0.700 ± 0.048
UKB_WCSG	0.720 ± 0.040	0.820 ± 0.038	0.630 ± 0.047	0.830 ± 0.047	0.734 ± 0.040
CYTOSNP	0.797 ± 0.048	0.816 ± 0.043	0.653 ± 0.052	0.759 ± 0.051	0.720 ± 0.046
PMRA	0.797 ± 0.039	0.817 ± 0.038	0.699 ± 0.050	0.766 ± 0.049	0.703 ± 0.042
PMDA	0.818 ± 0.030	0.842 ± 0.028	0.656 ± 0.037	0.798 ± 0.033	0.729 ± 0.032
OMNI2.5	0.872 ± 0.042	0.868 ± 0.039	0.726 ± 0.050	0.826 ± 0.049	0.787 ± 0.043
OMNI5	0.887 ± 0.040	0.900 ± 0.036	0.754 ± 0.047	0.894 ± 0.043	0.828 ± 0.040
LPS_0.5	0.881 ± 0.045	0.869 ± 0.044	0.763 ± 0.051	0.829 ± 0.049	0.812 ± 0.044
LPS_0.75	0.894 ± 0.045	0.883 ± 0.043	0.791 ± 0.050	0.849 ± 0.049	0.834 ± 0.043
LPS_1.0	0.904 ± 0.044	0.893 ± 0.042	0.813 ± 0.050	0.864 ± 0.047	0.851 ± 0.042
LPS_1.25	0.910 ± 0.042	0.900 ± 0.040	0.829 ± 0.048	0.874 ± 0.046	0.863 ± 0.041
LPS_1.5	0.915 ± 0.041	0.906 ± 0.039	0.840 ± 0.047	0.881 ± 0.045	0.871 ± 0.040
LPS_2.0	0.922 ± 0.040	0.913 ± 0.037	0.857 ± 0.045	0.892 ± 0.044	0.884 ± 0.038

Table S. 3 Imputation accuracy (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0.05–0.5]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.826 ± 0.040	0.914 ± 0.031	0.882 ± 0.035	0.910 ± 0.031	0.893 ± 0.035
JAPONICA	0.861 ± 0.031	0.938 ± 0.022	0.935 ± 0.023	0.934 ± 0.021	0.927 ± 0.024
UKB_WCSG	0.856 ± 0.027	0.941 ± 0.022	0.909 ± 0.024	0.949 ± 0.021	0.927 ± 0.025
CYTOSNP	0.908 ± 0.031	0.944 ± 0.027	0.923 ± 0.031	0.943 ± 0.025	0.932 ± 0.031
PMRA	0.897 ± 0.024	0.935 ± 0.023	0.914 ± 0.025	0.933 ± 0.022	0.918 ± 0.025
PMDA	0.909 ± 0.017	0.945 ± 0.016	0.916 ± 0.018	0.945 ± 0.016	0.929 ± 0.018
OMNI2.5	0.950 ± 0.025	0.962 ± 0.023	0.950 ± 0.025	0.963 ± 0.022	0.956 ± 0.026
OMNI5	0.959 ± 0.022	0.970 ± 0.020	0.960 ± 0.022	0.972 ± 0.019	0.966 ± 0.022
LPS_0.5	0.938 ± 0.035	0.947 ± 0.035	0.929 ± 0.037	0.945 ± 0.035	0.938 ± 0.037
LPS_0.75	0.947 ± 0.036	0.954 ± 0.036	0.940 ± 0.037	0.953 ± 0.036	0.947 ± 0.037
LPS_1.0	0.953 ± 0.034	0.959 ± 0.035	0.947 ± 0.037	0.958 ± 0.035	0.953 ± 0.036
LPS_1.25	0.957 ± 0.033	0.963 ± 0.033	0.953 ± 0.035	0.961 ± 0.034	0.957 ± 0.035
LPS_1.5	0.960 ± 0.032	0.965 ± 0.032	0.956 ± 0.034	0.964 ± 0.033	0.960 ± 0.034
LPS_2.0	0.965 ± 0.030	0.968 ± 0.030	0.961 ± 0.032	0.968 ± 0.031	0.965 ± 0.032

Table S. 4 Imputation coverage (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0–0.01]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.248 ± 0.041	0.489 ± 0.057	0.168 ± 0.033	0.307 ± 0.047	0.230 ± 0.035
JAPONICA	0.294 ± 0.041	0.527 ± 0.050	0.200 ± 0.036	0.343 ± 0.043	0.247 ± 0.036
UKB_WCSG	0.295 ± 0.031	0.538 ± 0.042	0.206 ± 0.028	0.369 ± 0.040	0.273 ± 0.030
CYTOSNP	0.364 ± 0.045	0.589 ± 0.048	0.222 ± 0.034	0.384 ± 0.039	0.259 ± 0.031
PMRA	0.318 ± 0.036	0.580 ± 0.042	0.214 ± 0.030	0.364 ± 0.036	0.251 ± 0.031
PMDA	0.331 ± 0.028	0.597 ± 0.030	0.208 ± 0.021	0.378 ± 0.027	0.256 ± 0.024
OMNI2.5	0.487 ± 0.049	0.678 ± 0.047	0.284 ± 0.037	0.464 ± 0.042	0.339 ± 0.037
OMNI5	0.538 ± 0.047	0.734 ± 0.046	0.319 ± 0.037	0.564 ± 0.046	0.425 ± 0.040
LPS_0.5	0.543 ± 0.058	0.705 ± 0.053	0.314 ± 0.044	0.496 ± 0.052	0.388 ± 0.047
LPS_0.75	0.581 ± 0.058	0.734 ± 0.052	0.355 ± 0.047	0.535 ± 0.053	0.436 ± 0.049
LPS_1.0	0.613 ± 0.057	0.755 ± 0.051	0.392 ± 0.048	0.570 ± 0.052	0.476 ± 0.049
LPS_1.25	0.634 ± 0.055	0.771 ± 0.050	0.422 ± 0.049	0.595 ± 0.052	0.508 ± 0.050
LPS_1.5	0.651 ± 0.054	0.783 ± 0.048	0.447 ± 0.049	0.615 ± 0.051	0.534 ± 0.050
LPS_2.0	0.679 ± 0.051	0.801 ± 0.047	0.491 ± 0.049	0.648 ± 0.050	0.575 ± 0.048

Table S. 5 Imputation coverage (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0.01–0.05]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.400 ± 0.074	0.644 ± 0.070	0.480 ± 0.056	0.663 ± 0.062	0.478 ± 0.059
JAPONICA	0.522 ± 0.067	0.656 ± 0.061	0.563 ± 0.059	0.568 ± 0.062	0.508 ± 0.055
UKB_WCSG	0.466 ± 0.047	0.727 ± 0.048	0.448 ± 0.045	0.758 ± 0.056	0.570 ± 0.043
CYTOSNP	0.674 ± 0.069	0.714 ± 0.054	0.488 ± 0.050	0.608 ± 0.058	0.549 ± 0.052
PMRA	0.662 ± 0.047	0.722 ± 0.046	0.557 ± 0.049	0.632 ± 0.056	0.525 ± 0.043
PMDA	0.714 ± 0.037	0.771 ± 0.031	0.498 ± 0.043	0.682 ± 0.040	0.564 ± 0.039
OMNI2.5	0.836 ± 0.054	0.811 ± 0.047	0.581 ± 0.050	0.733 ± 0.057	0.659 ± 0.048
OMNI5	0.861 ± 0.049	0.870 ± 0.041	0.618 ± 0.048	0.866 ± 0.050	0.734 ± 0.047
LPS_0.5	0.852 ± 0.066	0.811 ± 0.060	0.598 ± 0.064	0.732 ± 0.069	0.690 ± 0.062
LPS_0.75	0.877 ± 0.063	0.839 ± 0.059	0.653 ± 0.066	0.777 ± 0.068	0.740 ± 0.061
LPS_1.0	0.892 ± 0.061	0.857 ± 0.058	0.699 ± 0.066	0.812 ± 0.066	0.778 ± 0.059
LPS_1.25	0.900 ± 0.059	0.871 ± 0.056	0.735 ± 0.064	0.834 ± 0.063	0.805 ± 0.057
LPS_1.5	0.907 ± 0.056	0.880 ± 0.054	0.763 ± 0.063	0.850 ± 0.059	0.825 ± 0.055
LPS_2.0	0.917 ± 0.049	0.893 ± 0.049	0.804 ± 0.058	0.872 ± 0.054	0.852 ± 0.050

Table S. 6 Imputation coverage (mean and standard deviation across 22 autosomes) for eight genotyping arrays and six LPS coverages, evaluated across five populations for variant with allel frequency (0.05–0.5]

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.697 ± 0.078	0.893 ± 0.044	0.834 ± 0.051	0.882 ± 0.047	0.853 ± 0.052
JAPONICA	0.782 ± 0.058	0.930 ± 0.030	0.928 ± 0.030	0.917 ± 0.029	0.912 ± 0.034
UKB_WCSG	0.764 ± 0.045	0.943 ± 0.026	0.886 ± 0.030	0.952 ± 0.024	0.922 ± 0.030
CYTOSNP	0.881 ± 0.048	0.929 ± 0.033	0.897 ± 0.039	0.926 ± 0.031	0.911 ± 0.039
PMRA	0.872 ± 0.034	0.929 ± 0.029	0.898 ± 0.032	0.924 ± 0.028	0.902 ± 0.032
PMDA	0.907 ± 0.023	0.945 ± 0.018	0.892 ± 0.023	0.943 ± 0.018	0.918 ± 0.023
OMNI2.5	0.946 ± 0.030	0.954 ± 0.027	0.937 ± 0.029	0.956 ± 0.025	0.948 ± 0.030
OMNI5	0.956 ± 0.026	0.965 ± 0.024	0.949 ± 0.026	0.968 ± 0.022	0.960 ± 0.026
LPS_0.5	0.935 ± 0.052	0.938 ± 0.053	0.908 ± 0.055	0.935 ± 0.052	0.924 ± 0.056
LPS_0.75	0.943 ± 0.051	0.946 ± 0.053	0.924 ± 0.054	0.944 ± 0.052	0.936 ± 0.055
LPS_1.0	0.948 ± 0.050	0.950 ± 0.052	0.934 ± 0.053	0.950 ± 0.051	0.943 ± 0.054
LPS_1.25	0.951 ± 0.049	0.954 ± 0.050	0.940 ± 0.051	0.953 ± 0.049	0.947 ± 0.052
LPS_1.5	0.953 ± 0.047	0.957 ± 0.047	0.947 ± 0.044	0.957 ± 0.045	0.951 ± 0.048
LPS_2.0	0.960 ± 0.036	0.964 ± 0.037	0.955 ± 0.038	0.964 ± 0.036	0.960 ± 0.038

Table S. 7 Mean and the standard deviation of PGS correlation of eight genotyping arrays and six LPS coverages of the phenotype the phenotype body mass index (BMI)

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.953 ± 0.007	0.983 ± 0.004	0.958 ± 0.011	0.979 ± 0.005	0.973 ± 0.008
JAPONICA	0.964 ± 0.005	0.987 ± 0.004	0.983 ± 0.004	0.984 ± 0.004	0.981 ± 0.005
UKB_WCSG	0.961 ± 0.006	0.990 ± 0.001	0.971 ± 0.007	0.992 ± 0.001	0.985 ± 0.003
CYTOSNP	0.984 ± 0.003	0.993 ± 0.002	0.983 ± 0.006	0.991 ± 0.004	0.988 ± 0.005
PMRA	0.967 ± 0.007	0.986 ± 0.002	0.967 ± 0.009	0.984 ± 0.005	0.976 ± 0.006
PMDA	0.969 ± 0.004	0.988 ± 0.003	0.968 ± 0.006	0.987 ± 0.004	0.978 ± 0.004
OMNI2.5	0.995 ± 0.001	0.997 ± 0.001	0.994 ± 0.002	0.997 ± 0.001	0.996 ± 0.001
OMNI5	0.997 ± 0.000	0.998 ± 0.000	0.996 ± 0.001	0.999 ± 0.000	0.998 ± 0.000
LPS_0.5	0.983 ± 0.004	0.989 ± 0.003	0.973 ± 0.008	0.986 ± 0.005	0.982 ± 0.006
LPS_0.75	0.987 ± 0.003	0.991 ± 0.003	0.977 ± 0.009	0.990 ± 0.003	0.986 ± 0.005
LPS_1.0	0.990 ± 0.002	0.994 ± 0.001	0.983 ± 0.005	0.992 ± 0.002	0.990 ± 0.003
LPS_1.25	0.991 ± 0.002	0.995 ± 0.002	0.986 ± 0.004	0.993 ± 0.002	0.991 ± 0.003
LPS_1.5	0.992 ± 0.001	0.995 ± 0.001	0.989 ± 0.004	0.995 ± 0.002	0.992 ± 0.003
LPS_2.0	0.994 ± 0.001	0.996 ± 0.001	0.991 ± 0.003	0.996 ± 0.001	0.994 ± 0.002

Table S. 8 Mean and the standard deviation of PGS correlation of eight genotyping arrays and six LPS coverages of the phenotype height

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.947 ± 0.002	0.983 ± 0.001	0.963 ± 0.001	0.986 ± 0.001	0.972 ± 0.002
JAPONICA	0.961 ± 0.002	0.986 ± 0.001	0.984 ± 0.001	0.988 ± 0.002	0.982 ± 0.001
UKB_WCSG	0.956 ± 0.001	0.992 ± 0.000	0.976 ± 0.002	0.995 ± 0.000	0.987 ± 0.001
CYTOSNP	0.983 ± 0.002	0.993 ± 0.001	0.988 ± 0.002	0.994 ± 0.000	0.990 ± 0.002
PMRA	0.964 ± 0.002	0.986 ± 0.002	0.975 ± 0.001	0.989 ± 0.001	0.980 ± 0.002
PMDA	0.970 ± 0.001	0.987 ± 0.001	0.971 ± 0.002	0.991 ± 0.001	0.982 ± 0.001
OMNI2.5	0.995 ± 0.000	0.997 ± 0.000	0.995 ± 0.000	0.998 ± 0.000	0.996 ± 0.001
OMNI5	0.996 ± 0.000	0.999 ± 0.000	0.997 ± 0.000	0.999 ± 0.000	0.998 ± 0.000
LPS_0.5	0.981 ± 0.001	0.987 ± 0.002	0.974 ± 0.003	0.990 ± 0.001	0.981 ± 0.002
LPS_0.75	0.984 ± 0.001	0.990 ± 0.000	0.980 ± 0.001	0.993 ± 0.000	0.986 ± 0.001
LPS_1.0	0.987 ± 0.001	0.992 ± 0.000	0.984 ± 0.002	0.994 ± 0.001	0.989 ± 0.001
LPS_1.25	0.989 ± 0.001	0.993 ± 0.000	0.987 ± 0.001	0.995 ± 0.000	0.990 ± 0.001
LPS_1.5	0.990 ± 0.001	0.994 ± 0.000	0.989 ± 0.001	0.996 ± 0.001	0.991 ± 0.001
LPS_2.0	0.992 ± 0.001	0.995 ± 0.000	0.990 ± 0.001	0.996 ± 0.000	0.993 ± 0.000

Table S. 9 Mean and the standard deviation of PGS correlation of eight genotyping arrays and six LPS coverages of the phenotype diabetes

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.960 ± 0.003	0.986 ± 0.003	0.960 ± 0.016	0.983 ± 0.005	0.976 ± 0.008
JAPONICA	0.967 ± 0.004	0.990 ± 0.002	0.984 ± 0.004	0.988 ± 0.003	0.982 ± 0.003
UKB_WCSG	0.962 ± 0.003	0.991 ± 0.001	0.973 ± 0.012	0.992 ± 0.002	0.984 ± 0.004
CYTOSNP	0.985 ± 0.001	0.995 ± 0.001	0.984 ± 0.003	0.993 ± 0.001	0.990 ± 0.003
PMRA	0.971 ± 0.002	0.989 ± 0.002	0.970 ± 0.011	0.987 ± 0.004	0.977 ± 0.005
PMDA	0.973 ± 0.003	0.990 ± 0.002	0.968 ± 0.009	0.989 ± 0.002	0.980 ± 0.004
OMNI2.5	0.995 ± 0.000	0.998 ± 0.000	0.993 ± 0.001	0.998 ± 0.001	0.996 ± 0.001
OMNI5	0.996 ± 0.000	0.999 ± 0.000	0.995 ± 0.001	0.999 ± 0.000	0.997 ± 0.001
LPS_0.5	0.984 ± 0.002	0.989 ± 0.001	0.972 ± 0.007	0.987 ± 0.002	0.982 ± 0.001
LPS_0.75	0.988 ± 0.001	0.992 ± 0.001	0.981 ± 0.004	0.990 ± 0.001	0.986 ± 0.002
LPS_1.0	0.991 ± 0.001	0.994 ± 0.001	0.985 ± 0.004	0.992 ± 0.001	0.989 ± 0.001
LPS_1.25	0.992 ± 0.001	0.995 ± 0.001	0.987 ± 0.002	0.993 ± 0.001	0.992 ± 0.001
LPS_1.5	0.993 ± 0.001	0.996 ± 0.001	0.989 ± 0.003	0.994 ± 0.001	0.992 ± 0.001
LPS_2.0	0.994 ± 0.001	0.996 ± 0.001	0.992 ± 0.003	0.995 ± 0.001	0.993 ± 0.001

Table S. 10 Mean and the standard deviation of PGS correlation of eight genotyping arrays and six LPS coverages of the phenotype metabolic

Array/LPS	AFR	AMR	EAS	EUR	SAS
GSA	0.955 ± 0.002	0.985 ± 0.002	0.959 ± 0.010	0.982 ± 0.001	0.972 ± 0.005
JAPONICA	0.969 ± 0.001	0.990 ± 0.001	0.984 ± 0.003	0.985 ± 0.002	0.979 ± 0.003
UKB_WCSG	0.961 ± 0.002	0.992 ± 0.001	0.973 ± 0.007	0.992 ± 0.000	0.986 ± 0.001
CYTOSNP	0.987 ± 0.001	0.995 ± 0.000	0.988 ± 0.005	0.993 ± 0.002	0.990 ± 0.003
PMRA	0.971 ± 0.002	0.988 ± 0.001	0.969 ± 0.008	0.985 ± 0.002	0.978 ± 0.005
PMDA	0.974 ± 0.003	0.991 ± 0.001	0.970 ± 0.008	0.988 ± 0.002	0.980 ± 0.003
OMNI2.5	0.995 ± 0.000	0.997 ± 0.000	0.994 ± 0.001	0.997 ± 0.000	0.996 ± 0.001
OMNI5	0.997 ± 0.000	0.999 ± 0.000	0.997 ± 0.001	0.999 ± 0.000	0.998 ± 0.000
LPS_0.5	0.986 ± 0.001	0.991 ± 0.000	0.975 ± 0.008	0.988 ± 0.003	0.982 ± 0.006
LPS_0.75	0.988 ± 0.001	0.994 ± 0.000	0.982 ± 0.007	0.991 ± 0.002	0.987 ± 0.004
LPS_1.0	0.991 ± 0.001	0.995 ± 0.000	0.986 ± 0.005	0.993 ± 0.002	0.990 ± 0.003
LPS_1.25	0.993 ± 0.001	0.996 ± 0.000	0.989 ± 0.004	0.994 ± 0.001	0.991 ± 0.003
LPS_1.5	0.994 ± 0.000	0.996 ± 0.001	0.990 ± 0.004	0.995 ± 0.001	0.993 ± 0.003
LPS_2.0	0.995 ± 0.000	0.997 ± 0.000	0.993 ± 0.003	0.996 ± 0.001	0.994 ± 0.002

Table S. 11 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 5e-08

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	6.238 ± 5.600	3.508 ± 3.273	5.556 ± 5.350	3.860 ± 3.346	4.124 ± 3.773
BMI	JAPONICA	5.442 ± 4.932	3.030 ± 2.685	3.723 ± 3.493	3.126 ± 2.801	3.323 ± 3.006
BMI	UKB_WCSG	5.943 ± 5.295	2.918 ± 2.786	4.965 ± 4.503	2.639 ± 2.332	3.434 ± 3.077
BMI	CYTOSNP	3.490 ± 3.478	2.041 ± 1.945	3.430 ± 3.191	2.057 ± 1.951	2.452 ± 2.212
BMI	PMRA	5.108 ± 4.590	3.211 ± 2.978	5.002 ± 4.960	3.103 ± 3.016	4.006 ± 3.640
BMI	PMDA	5.334 ± 4.683	3.077 ± 2.769	5.050 ± 5.027	2.890 ± 2.575	3.972 ± 3.570
BMI	OMNI2.5	2.133 ± 2.136	1.525 ± 1.515	2.105 ± 2.112	1.424 ± 1.360	1.590 ± 1.553
BMI	OMNI5	1.709 ± 1.745	1.227 ± 1.302	1.843 ± 1.800	1.046 ± 1.148	1.264 ± 1.294
BMI	LPS_0.5	3.799 ± 3.634	2.810 ± 2.552	4.573 ± 4.329	2.967 ± 2.714	3.220 ± 2.850
BMI	LPS_0.75	3.369 ± 3.306	2.314 ± 2.150	3.606 ± 3.406	2.542 ± 2.408	2.883 ± 2.576
BMI	LPS_1.0	2.802 ± 2.581	2.025 ± 1.938	3.474 ± 3.107	2.400 ± 2.311	2.647 ± 2.398
BMI	LPS_1.25	2.736 ± 2.806	1.946 ± 1.657	3.059 ± 2.910	2.229 ± 2.145	2.429 ± 2.302
BMI	LPS_1.5	2.554 ± 2.462	1.808 ± 1.664	2.800 ± 2.615	1.786 ± 1.706	2.143 ± 1.888
BMI	LPS_2.0	2.205 ± 2.131	1.614 ± 1.472	2.482 ± 2.351	1.556 ± 1.462	2.082 ± 1.872
DIABETES	GSA	5.785 ± 5.322	3.219 ± 3.201	4.330 ± 3.956	2.932 ± 2.903	3.551 ± 3.538
DIABETES	JAPONICA	5.557 ± 5.429	2.634 ± 2.818	3.338 ± 3.078	2.649 ± 2.642	3.637 ± 3.432
DIABETES	UKB_WCSG	6.265 ± 6.166	2.733 ± 2.958	3.564 ± 3.280	2.182 ± 2.329	2.861 ± 3.009
DIABETES	CYTOSNP	3.736 ± 3.600	2.334 ± 2.384	3.475 ± 3.394	2.101 ± 2.671	2.352 ± 2.825
DIABETES	PMRA	5.535 ± 5.223	2.775 ± 3.142	4.174 ± 3.853	2.630 ± 2.782	3.890 ± 3.674
DIABETES	PMDA	5.221 ± 4.853	2.717 ± 2.808	4.549 ± 4.205	2.569 ± 2.542	3.556 ± 3.639
DIABETES	OMNI2.5	2.113 ± 2.371	1.571 ± 1.927	2.479 ± 2.799	0.913 ± 1.551	1.538 ± 2.129

DIABETES	OMNI5	1.761 ± 1.998	0.985 ± 1.488	2.072 ± 2.458	0.669 ± 1.307	1.247 ± 1.841
DIABETES	LPS_0.5	4.217 ± 4.228	3.831 ± 3.873	4.647 ± 4.637	3.604 ± 3.355	4.511 ± 4.373
DIABETES	LPS_0.75	3.450 ± 3.163	2.947 ± 2.901	4.204 ± 3.945	3.084 ± 2.853	3.865 ± 3.672
DIABETES	LPS_1.0	3.194 ± 3.178	2.713 ± 2.727	3.550 ± 3.336	3.066 ± 2.815	3.345 ± 3.068
DIABETES	LPS_1.25	2.890 ± 2.917	2.452 ± 2.461	3.376 ± 3.154	2.697 ± 2.543	3.155 ± 3.100
DIABETES	LPS_1.5	2.662 ± 2.652	2.457 ± 2.309	3.141 ± 2.794	2.686 ± 2.535	2.841 ± 2.665
DIABETES	LPS_2.0	2.372 ± 2.268	2.375 ± 2.268	2.116 ± 2.184	2.496 ± 2.297	2.903 ± 2.608
HEIGHT	GSA	7.154 ± 6.563	3.888 ± 3.659	5.941 ± 5.495	3.987 ± 3.747	5.344 ± 4.797
HEIGHT	JAPONICA	6.566 ± 5.962	3.834 ± 3.639	3.758 ± 3.534	3.958 ± 3.474	4.274 ± 3.844
HEIGHT	UKB_WCSG	6.525 ± 5.817	3.043 ± 2.394	4.546 ± 4.281	2.391 ± 2.242	3.370 ± 3.157
HEIGHT	CYTOSNP	4.001 ± 3.694	2.549 ± 2.293	3.232 ± 2.839	2.727 ± 2.534	2.998 ± 2.772
HEIGHT	PMRA	5.795 ± 5.373	3.413 ± 3.083	5.008 ± 4.724	3.698 ± 3.385	4.314 ± 3.914
HEIGHT	PMDA	5.632 ± 5.255	3.614 ± 3.414	5.323 ± 4.955	3.399 ± 3.103	4.343 ± 4.003
HEIGHT	OMNI2.5	2.306 ± 2.322	1.712 ± 1.661	2.185 ± 1.922	1.517 ± 1.472	1.933 ± 1.861
HEIGHT	OMNI5	1.899 ± 1.758	1.264 ± 1.238	1.718 ± 1.596	1.063 ± 1.056	1.454 ± 1.373
HEIGHT	LPS_0.5	4.416 ± 4.060	3.653 ± 3.164	4.774 ± 4.179	3.503 ± 3.254	3.966 ± 3.707
HEIGHT	LPS_0.75	4.007 ± 3.718	3.021 ± 2.867	4.367 ± 3.979	2.921 ± 2.741	3.708 ± 3.376
HEIGHT	LPS_1.0	3.612 ± 3.210	2.878 ± 2.554	3.872 ± 3.445	2.753 ± 2.531	3.280 ± 2.880
HEIGHT	LPS_1.25	3.263 ± 2.934	2.654 ± 2.316	3.480 ± 3.095	2.477 ± 2.234	3.012 ± 2.854
HEIGHT	LPS_1.5	3.015 ± 2.835	2.610 ± 2.371	3.205 ± 2.951	2.397 ± 2.194	2.991 ± 2.735
HEIGHT	LPS_2.0	2.683 ± 2.512	2.389 ± 2.169	2.932 ± 2.692	2.236 ± 2.009	2.596 ± 2.585
METABOLIC	GSA	6.711 ± 6.067	4.181 ± 4.005	4.999 ± 4.543	4.013 ± 3.878	4.715 ± 4.405
METABOLIC	JAPONICA	5.834 ± 5.441	3.535 ± 3.556	3.568 ± 3.371	3.718 ± 3.434	4.319 ± 3.866
METABOLIC	UKB_WCSG	6.197 ± 5.556	3.279 ± 3.053	4.516 ± 4.129	2.675 ± 2.399	3.648 ± 3.672
METAB	CYTOSN	3.455 ±	2.437 ±	2.757 ±	2.260 ±	2.606 ±

OLIC	P	3.375	2.254	2.636	2.109	2.510
METAB OLIC	PMRA	5.260 ± 5.028	3.862 ± 3.528	4.436 ± 4.065	3.532 ± 3.571	4.195 ± 3.871
METAB OLIC	PMDA	5.140 ± 4.902	3.237 ± 2.980	4.430 ± 4.003	3.209 ± 3.005	4.117 ± 3.890
METAB OLIC	OMNI2.5	2.438 ± 2.194	2.018 ± 2.073	2.294 ± 2.041	1.718 ± 1.611	1.834 ± 1.781
METAB OLIC	OMNI5	1.783 ± 1.702	1.289 ± 1.365	1.547 ± 1.511	1.011 ± 1.059	1.251 ± 1.227
METAB OLIC	LPS_0.5	3.766 ± 3.501	3.136 ± 2.960	3.812 ± 3.360	3.021 ± 2.772	3.318 ± 2.965
METAB OLIC	LPS_0.75	3.228 ± 3.027	2.520 ± 2.570	3.385 ± 3.044	2.624 ± 2.368	2.910 ± 2.795
METAB OLIC	LPS_1.0	2.779 ± 2.613	2.566 ± 2.413	2.772 ± 2.458	2.236 ± 2.047	2.463 ± 2.201
METAB OLIC	LPS_1.25	2.478 ± 2.328	2.080 ± 1.990	2.630 ± 2.420	2.047 ± 1.892	2.477 ± 2.428
METAB OLIC	LPS_1.5	2.464 ± 2.262	2.016 ± 2.027	2.425 ± 2.125	1.858 ± 1.735	2.072 ± 1.983
METAB OLIC	LPS_2.0	2.154 ± 1.949	1.830 ± 1.835	2.124 ± 2.012	1.649 ± 1.583	2.024 ± 1.939

Table S. 12 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 1e-07

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	6.199 ± 5.721	3.538 ± 3.356	5.625 ± 5.278	3.861 ± 3.337	4.270 ± 3.843
BMI	JAPONICA	5.451 ± 5.033	3.207 ± 2.774	3.699 ± 3.448	3.203 ± 2.956	3.529 ± 3.143
BMI	UKB_WCSG	5.974 ± 5.374	3.098 ± 2.970	4.954 ± 4.552	2.500 ± 2.175	3.571 ± 3.134
BMI	CYTOSNP	3.460 ± 3.460	2.162 ± 2.038	3.438 ± 3.102	2.112 ± 2.053	2.653 ± 2.424
BMI	PMRA	4.989 ± 4.618	3.455 ± 3.122	5.079 ± 4.992	3.084 ± 2.980	4.100 ± 3.807
BMI	PMDA	5.359 ± 4.679	3.182 ± 2.895	5.200 ± 5.017	2.974 ± 2.578	4.092 ± 3.737
BMI	OMNI2.5	2.104 ± 2.102	1.667 ± 1.657	2.102 ± 2.133	1.468 ± 1.369	1.677 ± 1.623
BMI	OMNI5	1.672 ± 1.748	1.382 ± 1.567	1.838 ± 1.704	1.073 ± 1.153	1.292 ± 1.310
BMI	LPS_0.5	3.791 ± 3.624	2.869 ± 2.613	4.563 ± 4.315	2.921 ± 2.618	3.472 ± 3.043
BMI	LPS_0.75	3.391 ± 3.238	2.546 ± 2.307	3.680 ± 3.400	2.559 ± 2.329	3.013 ± 2.692
BMI	LPS_1.0	2.863 ± 2.607	2.139 ± 2.174	3.524 ± 3.259	2.406 ± 2.287	2.803 ± 2.567
BMI	LPS_1.25	2.754 ± 2.815	2.060 ± 1.823	3.062 ± 2.994	2.168 ± 2.055	2.546 ± 2.350
BMI	LPS_1.5	2.628 ± 2.452	1.820 ± 1.756	2.750 ± 2.601	1.790 ± 1.693	2.236 ± 2.083
BMI	LPS_2.0	2.240 ± 2.208	1.716 ± 1.583	2.555 ± 2.415	1.555 ± 1.510	2.164 ± 1.968
DIABETES	GSA	6.020 ± 5.633	3.109 ± 2.974	4.139 ± 3.852	3.005 ± 2.961	3.536 ± 3.559
DIABETES	JAPONICA	5.646 ± 5.618	2.564 ± 2.664	3.244 ± 2.935	2.777 ± 2.769	3.627 ± 3.396
DIABETES	UKB_WCSG	6.378 ± 6.097	2.707 ± 2.669	3.668 ± 3.208	2.246 ± 2.394	3.023 ± 2.981
DIABETES	CYTOSNP	3.741 ± 3.589	2.296 ± 2.204	3.503 ± 3.394	2.120 ± 2.688	2.415 ± 2.729
DIABETES	PMRA	5.747 ± 5.254	2.920 ± 3.191	4.130 ± 3.813	2.781 ± 2.834	4.031 ± 3.811
DIABETES	PMDA	5.386 ± 5.059	2.895 ± 2.967	4.335 ± 3.986	2.754 ± 2.778	3.823 ± 3.600
DIABETES	OMNI2.5	2.175 ± 2.377	1.614 ± 1.830	2.444 ± 2.723	0.975 ± 1.602	1.639 ± 2.089

DIABETES	OMNI5	1.789 ± 1.992	1.021 ± 1.374	1.982 ± 2.306	0.721 ± 1.288	1.259 ± 1.779
DIABETES	LPS_0.5	4.428 ± 4.425	3.734 ± 3.522	4.554 ± 4.461	3.665 ± 3.318	4.596 ± 4.356
DIABETES	LPS_0.75	3.613 ± 3.328	2.885 ± 2.804	4.019 ± 3.749	3.089 ± 2.779	3.881 ± 3.705
DIABETES	LPS_1.0	3.427 ± 3.322	2.699 ± 2.738	3.383 ± 3.153	3.042 ± 2.814	3.477 ± 3.194
DIABETES	LPS_1.25	3.004 ± 2.971	2.405 ± 2.385	3.247 ± 3.006	2.724 ± 2.592	3.259 ± 3.107
DIABETES	LPS_1.5	2.831 ± 2.794	2.340 ± 2.315	2.992 ± 2.667	2.662 ± 2.544	2.978 ± 2.847
DIABETES	LPS_2.0	2.509 ± 2.431	2.296 ± 2.045	2.131 ± 2.119	2.502 ± 2.309	3.038 ± 2.716
HEIGHT	GSA	7.328 ± 6.591	3.987 ± 3.705	5.894 ± 5.487	3.975 ± 3.714	5.271 ± 4.657
HEIGHT	JAPONICA	6.550 ± 5.988	3.832 ± 3.688	3.756 ± 3.597	3.873 ± 3.512	4.253 ± 3.867
HEIGHT	UKB_WCSG	6.652 ± 5.886	2.983 ± 2.410	4.608 ± 4.227	2.342 ± 2.225	3.457 ± 3.215
HEIGHT	CYTOSNP	4.003 ± 3.655	2.501 ± 2.314	3.258 ± 2.977	2.752 ± 2.541	3.017 ± 2.722
HEIGHT	PMRA	5.869 ± 5.445	3.337 ± 3.068	4.915 ± 4.667	3.650 ± 3.332	4.299 ± 3.942
HEIGHT	PMDA	5.664 ± 5.179	3.700 ± 3.335	5.380 ± 4.923	3.354 ± 3.058	4.279 ± 3.980
HEIGHT	OMNI2.5	2.303 ± 2.297	1.670 ± 1.605	2.163 ± 1.949	1.540 ± 1.481	2.012 ± 1.935
HEIGHT	OMNI5	1.886 ± 1.694	1.197 ± 1.191	1.785 ± 1.595	1.049 ± 1.004	1.468 ± 1.342
HEIGHT	LPS_0.5	4.434 ± 4.146	3.582 ± 3.236	4.698 ± 4.273	3.435 ± 3.171	4.002 ± 3.779
HEIGHT	LPS_0.75	4.009 ± 3.735	3.073 ± 2.806	4.399 ± 4.042	2.919 ± 2.670	3.703 ± 3.354
HEIGHT	LPS_1.0	3.595 ± 3.237	2.830 ± 2.458	3.930 ± 3.577	2.724 ± 2.531	3.283 ± 2.944
HEIGHT	LPS_1.25	3.281 ± 2.966	2.626 ± 2.344	3.396 ± 3.143	2.418 ± 2.145	3.005 ± 2.815
HEIGHT	LPS_1.5	3.066 ± 2.851	2.594 ± 2.378	3.175 ± 2.966	2.356 ± 2.145	2.996 ± 2.756
HEIGHT	LPS_2.0	2.733 ± 2.509	2.344 ± 2.203	2.955 ± 2.701	2.253 ± 1.961	2.556 ± 2.585
METABOLIC	GSA	6.668 ± 6.045	4.375 ± 4.209	5.263 ± 4.846	3.967 ± 3.691	4.972 ± 4.611
METABOLIC	JAPONICA	5.704 ± 5.238	3.684 ± 3.655	3.645 ± 3.394	3.752 ± 3.305	4.392 ± 4.037
METABOLIC	UKB_WCSG	6.295 ± 5.573	3.392 ± 3.221	4.686 ± 4.347	2.707 ± 2.414	3.650 ± 3.705
METAB	CYTOSN	3.510 ±	2.432 ±	2.930 ±	2.225 ±	2.656 ±

OLIC	P	3.363	2.244	2.684	2.052	2.596
METAB OLIC	PMRA	5.280 ± 4.999	3.812 ± 3.690	4.412 ± 4.293	3.498 ± 3.522	4.340 ± 4.150
METAB OLIC	PMDA	5.183 ± 4.837	3.216 ± 2.863	4.504 ± 4.161	3.207 ± 3.076	4.126 ± 3.856
METAB OLIC	OMNI2.5	2.450 ± 2.219	2.010 ± 1.933	2.408 ± 2.125	1.673 ± 1.502	1.883 ± 1.803
METAB OLIC	OMNI5	1.796 ± 1.708	1.319 ± 1.343	1.608 ± 1.557	1.037 ± 1.035	1.296 ± 1.282
METAB OLIC	LPS_0.5	3.847 ± 3.559	3.028 ± 2.869	3.841 ± 3.504	2.887 ± 2.764	3.418 ± 3.160
METAB OLIC	LPS_0.75	3.345 ± 3.032	2.654 ± 2.696	3.463 ± 3.030	2.629 ± 2.403	2.999 ± 2.857
METAB OLIC	LPS_1.0	2.796 ± 2.679	2.535 ± 2.472	2.831 ± 2.466	2.266 ± 2.007	2.549 ± 2.362
METAB OLIC	LPS_1.25	2.590 ± 2.460	2.154 ± 2.006	2.694 ± 2.414	2.013 ± 1.826	2.485 ± 2.418
METAB OLIC	LPS_1.5	2.508 ± 2.338	2.114 ± 1.948	2.505 ± 2.202	1.836 ± 1.660	2.108 ± 1.962
METAB OLIC	LPS_2.0	2.190 ± 2.058	1.940 ± 1.911	2.190 ± 2.067	1.602 ± 1.468	2.058 ± 1.829

Table S. 13 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 1e-06

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	6.585 ± 6.475	3.590 ± 3.628	5.691 ± 5.234	4.071 ± 3.395	4.478 ± 3.978
BMI	JAPONICA	5.708 ± 5.332	3.205 ± 3.000	3.574 ± 3.160	3.227 ± 2.951	3.561 ± 3.031
BMI	UKB_WCSG	5.966 ± 5.457	3.099 ± 2.871	4.970 ± 4.511	2.519 ± 2.152	3.499 ± 3.050
BMI	CYTOSNP	3.612 ± 3.526	2.119 ± 2.038	3.456 ± 3.258	2.305 ± 2.149	2.598 ± 2.472
BMI	PMRA	5.226 ± 4.658	3.689 ± 3.393	5.041 ± 4.662	3.351 ± 3.105	4.054 ± 3.549
BMI	PMDA	5.428 ± 5.002	3.142 ± 2.920	5.254 ± 4.788	2.916 ± 2.589	4.038 ± 3.614
BMI	OMNI2.5	2.234 ± 2.201	1.732 ± 1.673	2.056 ± 2.007	1.490 ± 1.426	1.712 ± 1.694
BMI	OMNI5	1.790 ± 1.836	1.351 ± 1.523	1.781 ± 1.681	1.079 ± 1.107	1.393 ± 1.322
BMI	LPS_0.5	3.743 ± 3.477	2.941 ± 2.614	4.454 ± 4.214	2.866 ± 2.523	3.370 ± 2.968
BMI	LPS_0.75	3.407 ± 3.376	2.496 ± 2.309	3.697 ± 3.505	2.623 ± 2.445	3.060 ± 2.789
BMI	LPS_1.0	2.855 ± 2.649	2.270 ± 2.252	3.412 ± 3.130	2.301 ± 2.168	2.633 ± 2.430
BMI	LPS_1.25	2.708 ± 2.765	2.086 ± 1.825	3.057 ± 2.991	1.981 ± 1.902	2.481 ± 2.155
BMI	LPS_1.5	2.661 ± 2.532	1.960 ± 1.824	2.668 ± 2.564	1.750 ± 1.680	2.246 ± 2.115
BMI	LPS_2.0	2.224 ± 2.220	1.810 ± 1.743	2.525 ± 2.374	1.658 ± 1.596	2.141 ± 2.032
DIABETES	GSA	6.534 ± 6.318	3.570 ± 3.000	4.849 ± 4.549	3.569 ± 3.282	3.988 ± 3.656
DIABETES	JAPONICA	6.052 ± 5.813	2.830 ± 2.921	3.540 ± 3.221	2.962 ± 2.958	3.753 ± 3.383
DIABETES	UKB_WCSG	6.887 ± 6.303	2.782 ± 2.732	3.936 ± 3.570	2.400 ± 2.524	3.277 ± 3.097
DIABETES	CYTOSNP	4.022 ± 3.926	2.102 ± 2.104	3.607 ± 3.490	2.126 ± 2.459	2.407 ± 2.628
DIABETES	PMRA	5.588 ± 5.222	3.107 ± 2.991	4.304 ± 4.076	2.990 ± 2.975	4.094 ± 3.827
DIABETES	PMDA	5.662 ± 5.436	2.864 ± 2.644	4.910 ± 4.643	2.860 ± 2.957	3.917 ± 3.701
DIABETES	OMNI2.5	2.236 ± 2.416	1.504 ± 1.664	2.466 ± 2.685	1.164 ± 1.584	1.648 ± 1.859

DIABETES	OMNI5	1.908 ± 2.167	0.992 ± 1.256	2.075 ± 2.333	0.924 ± 1.379	1.320 ± 1.596
DIABETES	LPS_0.5	4.403 ± 4.289	3.298 ± 3.128	4.601 ± 4.427	3.510 ± 3.393	4.203 ± 3.906
DIABETES	LPS_0.75	3.561 ± 3.373	2.605 ± 2.418	4.001 ± 3.771	2.957 ± 2.787	3.466 ± 3.150
DIABETES	LPS_1.0	3.349 ± 3.342	2.443 ± 2.355	3.385 ± 3.212	2.948 ± 2.904	3.131 ± 2.729
DIABETES	LPS_1.25	2.916 ± 2.794	2.150 ± 1.984	3.241 ± 3.164	2.564 ± 2.595	2.758 ± 2.825
DIABETES	LPS_1.5	2.823 ± 2.671	2.130 ± 2.058	3.086 ± 2.757	2.517 ± 2.632	2.579 ± 2.290
DIABETES	LPS_2.0	2.477 ± 2.354	1.966 ± 1.839	2.262 ± 2.228	2.337 ± 2.274	2.620 ± 2.410
HEIGHT	GSA	7.290 ± 6.511	4.188 ± 4.028	5.950 ± 5.306	3.993 ± 3.836	5.371 ± 4.748
HEIGHT	JAPONICA	6.572 ± 5.859	4.042 ± 3.982	3.842 ± 3.562	3.761 ± 3.481	4.373 ± 3.916
HEIGHT	UKB_WCSG	6.681 ± 5.888	3.120 ± 2.584	4.779 ± 4.291	2.281 ± 2.196	3.411 ± 3.080
HEIGHT	CYTOSNP	4.045 ± 3.695	2.632 ± 2.462	3.366 ± 2.914	2.724 ± 2.522	3.033 ± 2.850
HEIGHT	PMRA	5.938 ± 5.451	3.500 ± 3.185	4.952 ± 4.344	3.617 ± 3.116	4.441 ± 4.078
HEIGHT	PMDA	5.731 ± 5.233	3.943 ± 3.647	5.373 ± 4.887	3.331 ± 3.052	4.414 ± 4.034
HEIGHT	OMNI2.5	2.333 ± 2.268	1.717 ± 1.664	2.232 ± 1.985	1.579 ± 1.521	2.000 ± 1.924
HEIGHT	OMNI5	1.916 ± 1.701	1.267 ± 1.201	1.702 ± 1.595	1.039 ± 1.006	1.503 ± 1.449
HEIGHT	LPS_0.5	4.385 ± 4.025	3.764 ± 3.431	4.706 ± 4.227	3.422 ± 2.965	4.270 ± 3.840
HEIGHT	LPS_0.75	4.015 ± 3.608	3.154 ± 3.085	4.375 ± 3.836	2.899 ± 2.568	3.732 ± 3.416
HEIGHT	LPS_1.0	3.621 ± 3.177	3.020 ± 2.729	3.929 ± 3.527	2.644 ± 2.498	3.322 ± 3.039
HEIGHT	LPS_1.25	3.323 ± 2.932	2.747 ± 2.596	3.349 ± 3.130	2.558 ± 2.226	3.056 ± 2.736
HEIGHT	LPS_1.5	3.079 ± 2.781	2.695 ± 2.436	3.200 ± 2.968	2.384 ± 2.185	2.912 ± 2.673
HEIGHT	LPS_2.0	2.791 ± 2.564	2.444 ± 2.207	2.934 ± 2.617	2.185 ± 1.937	2.721 ± 2.516
METABOLIC	GSA	6.898 ± 6.078	4.466 ± 4.075	5.305 ± 4.567	4.098 ± 3.802	4.978 ± 4.527
METABOLIC	JAPONICA	5.805 ± 5.261	3.598 ± 3.398	3.521 ± 3.172	3.770 ± 3.218	4.576 ± 4.209
METABOLIC	UKB_WCSG	6.310 ± 5.651	3.261 ± 3.041	4.440 ± 3.920	2.655 ± 2.397	3.694 ± 3.539
METAB	CYTOSN	3.603 ±	2.372 ±	2.789 ±	2.258 ±	2.647 ±

OLIC	P	3.477	2.134	2.629	2.054	2.621
METAB OLIC	PMRA	5.381 ± 5.005	3.910 ± 3.757	4.539 ± 4.303	3.555 ± 3.440	4.327 ± 3.932
METAB OLIC	PMDA	5.463 ± 5.257	3.168 ± 2.959	4.613 ± 3.998	3.255 ± 3.072	4.207 ± 3.929
METAB OLIC	OMNI2.5	2.422 ± 2.294	1.887 ± 1.839	2.180 ± 1.944	1.616 ± 1.434	1.882 ± 1.934
METAB OLIC	OMNI5	1.713 ± 1.681	1.309 ± 1.350	1.499 ± 1.360	1.052 ± 1.028	1.362 ± 1.373
METAB OLIC	LPS_0.5	3.754 ± 3.344	3.001 ± 2.683	3.942 ± 3.550	2.869 ± 2.742	3.469 ± 3.290
METAB OLIC	LPS_0.75	3.305 ± 3.035	2.681 ± 2.511	3.320 ± 3.136	2.735 ± 2.512	2.995 ± 2.862
METAB OLIC	LPS_1.0	2.895 ± 2.711	2.518 ± 2.479	2.900 ± 2.537	2.224 ± 2.024	2.752 ± 2.561
METAB OLIC	LPS_1.25	2.497 ± 2.196	1.993 ± 1.780	2.675 ± 2.366	2.027 ± 1.868	2.565 ± 2.498
METAB OLIC	LPS_1.5	2.417 ± 2.251	2.041 ± 2.026	2.454 ± 2.227	2.006 ± 1.815	2.034 ± 1.949
METAB OLIC	LPS_2.0	2.195 ± 1.970	2.031 ± 1.966	2.187 ± 2.064	1.753 ± 1.622	2.176 ± 2.022

Table S. 14 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 1e-05

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	6.707 ± 6.253	3.520 ± 3.288	5.610 ± 4.866	4.157 ± 3.535	4.446 ± 4.070
BMI	JAPONICA	5.857 ± 5.176	3.122 ± 2.880	3.538 ± 3.161	3.533 ± 3.233	3.719 ± 3.265
BMI	UKB_WCSG	6.068 ± 5.862	3.149 ± 3.121	4.818 ± 4.301	2.564 ± 2.229	3.595 ± 3.246
BMI	CYTOSNP	3.735 ± 3.665	2.298 ± 2.259	3.482 ± 3.231	2.295 ± 2.154	2.681 ± 2.487
BMI	PMRA	5.403 ± 4.869	3.560 ± 3.279	5.130 ± 4.588	3.710 ± 3.384	4.512 ± 4.167
BMI	PMDA	5.629 ± 4.904	3.201 ± 3.083	5.234 ± 4.822	3.167 ± 2.759	3.984 ± 3.810
BMI	OMNI2.5	2.189 ± 2.063	1.720 ± 1.526	2.089 ± 2.063	1.537 ± 1.479	1.728 ± 1.602
BMI	OMNI5	1.791 ± 1.778	1.333 ± 1.368	1.761 ± 1.599	1.087 ± 1.005	1.449 ± 1.397
BMI	LPS_0.5	3.760 ± 3.528	3.065 ± 2.717	4.656 ± 4.299	3.003 ± 2.815	3.542 ± 3.051
BMI	LPS_0.75	3.329 ± 3.234	2.419 ± 2.330	3.847 ± 3.489	2.715 ± 2.381	3.220 ± 3.050
BMI	LPS_1.0	2.996 ± 2.778	2.384 ± 2.174	3.521 ± 3.023	2.390 ± 2.181	2.885 ± 2.765
BMI	LPS_1.25	2.823 ± 2.798	2.020 ± 1.922	3.212 ± 2.993	2.217 ± 2.031	2.739 ± 2.382
BMI	LPS_1.5	2.645 ± 2.466	1.967 ± 1.859	2.838 ± 2.546	1.878 ± 1.742	2.313 ± 2.143
BMI	LPS_2.0	2.328 ± 2.186	1.766 ± 1.676	2.551 ± 2.221	1.702 ± 1.530	2.152 ± 2.003
DIABETES	GSA	6.684 ± 5.810	3.254 ± 2.949	5.023 ± 4.792	3.673 ± 3.357	4.277 ± 3.895
DIABETES	JAPONICA	5.493 ± 5.297	2.814 ± 2.671	3.647 ± 3.457	2.958 ± 2.941	3.929 ± 3.393
DIABETES	UKB_WCSG	6.198 ± 5.619	2.789 ± 2.353	4.000 ± 3.659	2.421 ± 2.470	3.401 ± 3.240
DIABETES	CYTOSNP	3.970 ± 3.683	2.086 ± 2.023	3.467 ± 3.310	2.156 ± 2.285	2.501 ± 2.518
DIABETES	PMRA	5.392 ± 5.098	2.899 ± 2.648	4.309 ± 4.293	3.192 ± 3.060	4.310 ± 3.970
DIABETES	PMDA	5.333 ± 4.784	2.777 ± 2.509	4.871 ± 4.561	3.057 ± 2.934	4.172 ± 3.925
DIABETES	OMNI2.5	2.224 ± 2.249	1.543 ± 1.582	2.376 ± 2.439	1.199 ± 1.381	1.752 ± 1.827

DIABETES	OMNI5	1.928 ± 2.051	1.110 ± 1.242	2.012 ± 2.039	0.929 ± 1.220	1.384 ± 1.540
DIABETES	LPS_0.5	4.186 ± 3.933	3.044 ± 2.831	4.355 ± 4.168	3.446 ± 3.070	4.135 ± 3.753
DIABETES	LPS_0.75	3.238 ± 3.092	2.529 ± 2.361	3.846 ± 3.484	2.819 ± 2.607	3.463 ± 3.077
DIABETES	LPS_1.0	3.119 ± 3.083	2.130 ± 2.042	3.361 ± 3.204	2.778 ± 2.619	3.194 ± 2.777
DIABETES	LPS_1.25	2.653 ± 2.571	2.097 ± 1.992	3.206 ± 3.285	2.389 ± 2.276	2.949 ± 2.688
DIABETES	LPS_1.5	2.553 ± 2.392	1.964 ± 1.914	2.950 ± 2.832	2.373 ± 2.288	2.776 ± 2.400
DIABETES	LPS_2.0	2.286 ± 2.219	1.797 ± 1.648	2.292 ± 2.212	2.187 ± 1.997	2.822 ± 2.431
HEIGHT	GSA	7.251 ± 6.672	4.209 ± 3.970	5.930 ± 5.366	4.039 ± 3.750	5.478 ± 4.765
HEIGHT	JAPONICA	6.585 ± 5.871	3.969 ± 3.818	3.933 ± 3.668	3.697 ± 3.441	4.274 ± 3.947
HEIGHT	UKB_WCSG	6.680 ± 6.148	3.078 ± 2.580	4.804 ± 4.336	2.365 ± 2.222	3.442 ± 3.181
HEIGHT	CYTOSNP	4.016 ± 3.828	2.730 ± 2.448	3.377 ± 2.993	2.624 ± 2.472	3.163 ± 2.919
HEIGHT	PMRA	5.977 ± 5.669	3.531 ± 3.388	4.870 ± 4.287	3.648 ± 3.241	4.436 ± 3.996
HEIGHT	PMDA	5.627 ± 5.093	3.790 ± 3.540	5.284 ± 4.780	3.239 ± 2.992	4.475 ± 4.124
HEIGHT	OMNI2.5	2.371 ± 2.229	1.715 ± 1.696	2.176 ± 1.972	1.538 ± 1.475	2.055 ± 1.976
HEIGHT	OMNI5	1.936 ± 1.738	1.268 ± 1.235	1.768 ± 1.692	1.043 ± 1.040	1.580 ± 1.427
HEIGHT	LPS_0.5	4.398 ± 4.029	3.849 ± 3.509	4.732 ± 4.319	3.348 ± 3.132	4.389 ± 3.926
HEIGHT	LPS_0.75	4.041 ± 3.818	3.266 ± 3.145	4.433 ± 3.823	2.971 ± 2.751	3.697 ± 3.260
HEIGHT	LPS_1.0	3.506 ± 3.238	2.991 ± 2.703	4.083 ± 3.626	2.666 ± 2.364	3.344 ± 3.063
HEIGHT	LPS_1.25	3.418 ± 2.995	2.731 ± 2.554	3.491 ± 3.227	2.547 ± 2.279	3.048 ± 2.771
HEIGHT	LPS_1.5	3.106 ± 2.986	2.662 ± 2.400	3.315 ± 3.086	2.283 ± 2.087	2.886 ± 2.645
HEIGHT	LPS_2.0	2.858 ± 2.675	2.526 ± 2.303	3.016 ± 2.767	2.161 ± 1.965	2.697 ± 2.600
METABOLIC	GSA	7.064 ± 6.211	4.309 ± 3.949	5.501 ± 4.742	3.907 ± 3.671	4.997 ± 4.461
METABOLIC	JAPONICA	5.846 ± 5.148	3.501 ± 3.419	3.474 ± 3.040	3.730 ± 3.343	4.182 ± 3.687
METABOLIC	UKB_WCSG	6.444 ± 5.697	3.174 ± 3.214	4.360 ± 3.903	2.703 ± 2.446	3.510 ± 3.292
METAB	CYTOSN	3.674 ±	2.422 ±	2.712 ±	2.210 ±	2.606 ±

OLIC	P	3.387	2.345	2.417	2.015	2.482
METAB OLIC	PMRA	5.440 ± 5.202	3.940 ± 3.743	4.552 ± 4.152	3.574 ± 3.400	4.223 ± 3.766
METAB OLIC	PMDA	5.542 ± 4.919	3.199 ± 3.175	4.626 ± 4.014	3.290 ± 2.994	4.210 ± 4.009
METAB OLIC	OMNI2.5	2.484 ± 2.170	1.827 ± 1.690	2.316 ± 1.932	1.716 ± 1.598	1.913 ± 1.841
METAB OLIC	OMNI5	1.790 ± 1.689	1.214 ± 1.229	1.593 ± 1.439	1.098 ± 1.071	1.434 ± 1.425
METAB OLIC	LPS_0.5	3.830 ± 3.424	3.030 ± 2.859	4.014 ± 3.644	2.972 ± 2.770	3.525 ± 3.250
METAB OLIC	LPS_0.75	3.379 ± 2.987	2.611 ± 2.493	3.212 ± 2.785	2.669 ± 2.364	3.019 ± 2.902
METAB OLIC	LPS_1.0	2.857 ± 2.621	2.345 ± 2.264	3.027 ± 2.702	2.315 ± 2.130	2.698 ± 2.531
METAB OLIC	LPS_1.25	2.564 ± 2.322	1.835 ± 1.629	2.668 ± 2.400	2.066 ± 1.890	2.516 ± 2.418
METAB OLIC	LPS_1.5	2.386 ± 2.189	1.988 ± 2.021	2.426 ± 2.137	1.885 ± 1.779	2.123 ± 1.974
METAB OLIC	LPS_2.0	2.170 ± 2.006	2.005 ± 1.866	2.090 ± 2.008	1.746 ± 1.625	2.141 ± 2.057

Table S. 15 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.0001

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.107 ± 6.484	3.898 ± 3.463	5.900 ± 5.003	4.246 ± 3.840	4.560 ± 4.194
BMI	JAPONICA	6.036 ± 5.396	3.163 ± 2.837	3.676 ± 3.172	3.645 ± 3.482	3.802 ± 3.367
BMI	UKB_WCSG	6.271 ± 5.694	3.167 ± 2.740	4.802 ± 4.052	2.881 ± 2.695	3.498 ± 3.087
BMI	CYTOSNP	3.924 ± 3.653	2.289 ± 2.253	3.490 ± 3.105	2.641 ± 2.424	2.823 ± 2.560
BMI	PMRA	5.651 ± 5.050	3.547 ± 3.136	4.942 ± 4.372	3.849 ± 3.421	4.352 ± 4.111
BMI	PMDA	5.470 ± 4.957	3.110 ± 2.766	5.132 ± 4.545	3.550 ± 3.271	4.288 ± 3.889
BMI	OMNI2.5	2.397 ± 2.217	1.666 ± 1.526	2.061 ± 2.058	1.604 ± 1.635	1.634 ± 1.459
BMI	OMNI5	1.876 ± 1.777	1.221 ± 1.172	1.701 ± 1.595	1.102 ± 1.044	1.477 ± 1.379
BMI	LPS_0.5	3.922 ± 3.428	3.021 ± 2.740	4.475 ± 3.982	3.381 ± 3.140	3.668 ± 3.220
BMI	LPS_0.75	3.355 ± 3.050	2.472 ± 2.070	3.880 ± 3.437	2.858 ± 2.627	3.283 ± 2.964
BMI	LPS_1.0	3.144 ± 2.868	2.107 ± 1.878	3.566 ± 3.330	2.615 ± 2.501	2.816 ± 2.568
BMI	LPS_1.25	2.895 ± 2.727	2.003 ± 1.817	3.245 ± 2.952	2.369 ± 2.223	2.730 ± 2.289
BMI	LPS_1.5	2.723 ± 2.469	1.883 ± 1.780	2.836 ± 2.769	1.956 ± 1.872	2.393 ± 2.175
BMI	LPS_2.0	2.430 ± 2.279	1.752 ± 1.591	2.527 ± 2.188	1.898 ± 1.759	2.187 ± 1.937
DIABETES	GSA	6.755 ± 5.928	3.315 ± 3.284	6.001 ± 5.758	3.918 ± 3.569	4.918 ± 4.598
DIABETES	JAPONICA	5.815 ± 5.265	2.806 ± 2.588	3.830 ± 3.660	3.279 ± 3.050	3.973 ± 3.585
DIABETES	UKB_WCSG	6.041 ± 5.379	2.889 ± 2.652	4.434 ± 3.969	2.812 ± 2.935	3.811 ± 3.447
DIABETES	CYTOSNP	4.000 ± 3.652	2.163 ± 2.149	3.536 ± 3.437	2.358 ± 2.324	2.863 ± 2.791
DIABETES	PMRA	5.548 ± 5.077	3.043 ± 2.593	5.219 ± 5.015	3.650 ± 3.511	4.559 ± 4.047
DIABETES	PMDA	5.315 ± 4.804	3.135 ± 2.645	5.053 ± 4.684	3.328 ± 3.131	4.624 ± 4.157
DIABETES	OMNI2.5	2.245 ± 2.055	1.616 ± 1.574	2.492 ± 2.438	1.390 ± 1.416	1.846 ± 1.894

DIABETES	OMNI5	1.960 ± 1.901	1.228 ± 1.138	2.066 ± 1.995	1.152 ± 1.240	1.483 ± 1.386
DIABETES	LPS_0.5	3.943 ± 3.688	3.041 ± 2.781	4.854 ± 4.568	3.499 ± 3.282	4.193 ± 3.484
DIABETES	LPS_0.75	3.099 ± 2.927	2.771 ± 2.248	4.134 ± 3.827	3.080 ± 2.865	3.471 ± 3.142
DIABETES	LPS_1.0	3.022 ± 2.798	2.325 ± 2.148	3.459 ± 3.258	2.901 ± 2.874	3.123 ± 2.565
DIABETES	LPS_1.25	2.740 ± 2.444	1.913 ± 1.772	3.435 ± 3.177	2.522 ± 2.411	2.739 ± 2.462
DIABETES	LPS_1.5	2.522 ± 2.267	2.104 ± 2.027	2.997 ± 2.835	2.322 ± 2.275	2.714 ± 2.344
DIABETES	LPS_2.0	2.172 ± 2.107	1.867 ± 1.658	2.533 ± 2.478	2.270 ± 2.220	2.649 ± 2.255
HEIGHT	GSA	7.474 ± 7.015	4.132 ± 3.956	6.012 ± 5.397	3.991 ± 3.758	5.359 ± 4.719
HEIGHT	JAPONICA	6.554 ± 6.103	3.873 ± 3.736	3.758 ± 3.449	3.604 ± 3.295	4.386 ± 4.005
HEIGHT	UKB_WCSG	6.732 ± 6.048	3.103 ± 2.633	4.904 ± 4.279	2.298 ± 2.224	3.612 ± 3.290
HEIGHT	CYTOSNP	4.193 ± 4.017	2.707 ± 2.468	3.423 ± 2.992	2.485 ± 2.238	3.088 ± 2.860
HEIGHT	PMRA	6.056 ± 6.004	3.592 ± 3.446	4.949 ± 4.351	3.563 ± 3.174	4.463 ± 4.062
HEIGHT	PMDA	5.563 ± 5.215	3.755 ± 3.595	5.267 ± 4.668	3.129 ± 2.977	4.526 ± 4.199
HEIGHT	OMNI2.5	2.345 ± 2.220	1.732 ± 1.769	2.192 ± 1.961	1.463 ± 1.427	2.081 ± 1.947
HEIGHT	OMNI5	1.943 ± 1.815	1.212 ± 1.186	1.775 ± 1.684	1.013 ± 1.032	1.567 ± 1.455
HEIGHT	LPS_0.5	4.411 ± 4.128	4.004 ± 3.540	4.915 ± 4.465	3.137 ± 2.853	4.299 ± 3.881
HEIGHT	LPS_0.75	3.976 ± 3.874	3.328 ± 3.013	4.485 ± 3.943	2.893 ± 2.611	3.710 ± 3.189
HEIGHT	LPS_1.0	3.446 ± 3.279	3.086 ± 2.853	4.108 ± 3.622	2.602 ± 2.362	3.418 ± 3.127
HEIGHT	LPS_1.25	3.387 ± 3.063	2.711 ± 2.691	3.512 ± 3.276	2.413 ± 2.167	3.103 ± 2.667
HEIGHT	LPS_1.5	3.087 ± 3.061	2.731 ± 2.614	3.331 ± 3.208	2.153 ± 1.991	3.127 ± 2.783
HEIGHT	LPS_2.0	2.819 ± 2.694	2.561 ± 2.481	2.986 ± 2.875	2.088 ± 1.861	2.784 ± 2.525
METABOLIC	GSA	7.323 ± 6.255	3.965 ± 3.740	5.593 ± 4.984	4.057 ± 3.737	4.849 ± 4.607
METABOLIC	JAPONICA	5.941 ± 5.547	3.370 ± 3.351	3.766 ± 3.331	3.680 ± 3.269	4.287 ± 3.904
METABOLIC	UKB_WCSG	6.811 ± 6.301	3.197 ± 3.236	4.730 ± 4.212	2.847 ± 2.680	3.644 ± 3.443
METAB	CYTOSN	3.763 ±	2.292 ±	3.026 ±	2.430 ±	2.624 ±

OLIC	P	3.616	2.039	2.594	2.248	2.345
METAB OLIC	PMRA	5.958 ± 5.855	4.016 ± 3.723	4.894 ± 4.372	3.543 ± 3.408	4.512 ± 3.996
METAB OLIC	PMDA	5.874 ± 5.307	3.280 ± 3.147	5.128 ± 4.464	3.363 ± 2.921	4.504 ± 4.099
METAB OLIC	OMNI2.5	2.474 ± 2.284	1.832 ± 1.641	2.425 ± 2.069	1.807 ± 1.699	2.070 ± 1.776
METAB OLIC	OMNI5	1.811 ± 1.695	1.173 ± 1.171	1.649 ± 1.539	1.145 ± 1.151	1.394 ± 1.243
METAB OLIC	LPS_0.5	3.938 ± 3.785	3.048 ± 2.933	4.613 ± 4.257	3.073 ± 2.976	3.954 ± 3.439
METAB OLIC	LPS_0.75	3.566 ± 3.415	2.721 ± 2.627	3.642 ± 3.192	2.674 ± 2.477	3.213 ± 3.011
METAB OLIC	LPS_1.0	3.001 ± 2.768	2.287 ± 2.388	3.149 ± 2.968	2.422 ± 2.261	2.977 ± 2.802
METAB OLIC	LPS_1.25	2.692 ± 2.494	1.904 ± 1.845	2.902 ± 2.612	2.136 ± 2.058	2.627 ± 2.505
METAB OLIC	LPS_1.5	2.584 ± 2.436	2.045 ± 2.063	2.690 ± 2.462	2.050 ± 1.870	2.235 ± 2.125
METAB OLIC	LPS_2.0	2.251 ± 2.170	2.015 ± 1.946	2.320 ± 2.056	1.768 ± 1.636	2.253 ± 2.048

Table S. 16 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.001

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.310 ± 6.490	4.021 ± 3.617	6.067 ± 5.287	4.665 ± 4.316	4.811 ± 4.265
BMI	JAPONICA	5.903 ± 5.408	3.347 ± 3.292	3.813 ± 3.383	4.007 ± 3.626	4.177 ± 3.789
BMI	UKB_WCSG	6.370 ± 5.767	3.526 ± 3.340	5.400 ± 4.544	2.901 ± 2.677	3.579 ± 3.405
BMI	CYTOSNP	4.024 ± 3.794	2.637 ± 2.512	3.854 ± 3.516	2.960 ± 2.817	3.029 ± 2.596
BMI	PMRA	5.806 ± 5.098	3.802 ± 3.464	5.267 ± 4.947	3.993 ± 3.416	4.718 ± 4.325
BMI	PMDA	5.723 ± 5.277	3.398 ± 3.456	5.694 ± 4.759	3.659 ± 3.351	4.473 ± 4.001
BMI	OMNI2.5	2.512 ± 2.251	1.850 ± 1.876	2.475 ± 2.189	1.655 ± 1.742	1.808 ± 1.579
BMI	OMNI5	2.105 ± 1.854	1.319 ± 1.263	1.844 ± 1.752	1.117 ± 1.113	1.462 ± 1.302
BMI	LPS_0.5	4.061 ± 3.549	3.318 ± 3.329	4.827 ± 4.267	3.739 ± 3.275	3.993 ± 3.484
BMI	LPS_0.75	3.664 ± 3.206	2.627 ± 2.341	4.289 ± 3.625	3.098 ± 2.897	3.461 ± 3.089
BMI	LPS_1.0	3.352 ± 3.037	2.496 ± 2.287	4.027 ± 3.617	2.749 ± 2.637	3.021 ± 2.705
BMI	LPS_1.25	3.066 ± 2.828	2.310 ± 2.223	3.562 ± 3.071	2.581 ± 2.333	2.764 ± 2.441
BMI	LPS_1.5	2.916 ± 2.483	2.195 ± 2.259	3.192 ± 2.831	2.243 ± 2.060	2.523 ± 2.230
BMI	LPS_2.0	2.471 ± 2.294	1.944 ± 2.115	2.752 ± 2.291	2.051 ± 1.923	2.308 ± 2.054
DIABETES	GSA	6.997 ± 6.069	3.889 ± 3.735	6.354 ± 5.472	4.794 ± 4.359	5.108 ± 4.707
DIABETES	JAPONICA	6.390 ± 5.696	2.943 ± 2.700	3.924 ± 3.718	3.583 ± 3.220	4.355 ± 3.703
DIABETES	UKB_WCSG	6.287 ± 5.542	3.115 ± 2.824	4.913 ± 4.353	3.033 ± 2.980	4.248 ± 3.795
DIABETES	CYTOSNP	4.211 ± 3.972	2.229 ± 2.089	3.847 ± 3.770	2.793 ± 2.594	3.273 ± 2.873
DIABETES	PMRA	5.878 ± 5.251	3.272 ± 2.912	5.161 ± 4.835	3.751 ± 3.578	5.065 ± 4.403
DIABETES	PMDA	5.514 ± 4.818	3.282 ± 2.891	5.382 ± 4.839	3.432 ± 3.456	4.651 ± 4.204
DIABETES	OMNI2.5	2.414 ± 2.342	1.521 ± 1.525	2.502 ± 2.461	1.685 ± 1.584	2.096 ± 1.990

DIABETES	OMNI5	2.139 ± 2.106	1.195 ± 1.096	2.037 ± 2.083	1.304 ± 1.279	1.682 ± 1.579
DIABETES	LPS_0.5	4.200 ± 3.845	2.891 ± 2.396	4.693 ± 4.149	3.527 ± 3.381	4.344 ± 3.763
DIABETES	LPS_0.75	3.414 ± 3.164	2.687 ± 2.266	4.124 ± 3.717	2.965 ± 2.844	3.758 ± 3.432
DIABETES	LPS_1.0	3.052 ± 2.877	2.382 ± 2.090	3.405 ± 3.068	2.838 ± 2.683	3.258 ± 2.967
DIABETES	LPS_1.25	2.725 ± 2.720	2.187 ± 1.896	3.281 ± 3.101	2.531 ± 2.277	2.768 ± 2.488
DIABETES	LPS_1.5	2.628 ± 2.490	2.055 ± 1.847	2.950 ± 2.795	2.511 ± 2.298	2.900 ± 2.674
DIABETES	LPS_2.0	2.348 ± 2.213	1.761 ± 1.637	2.604 ± 2.379	2.322 ± 2.216	2.645 ± 2.446
HEIGHT	GSA	7.661 ± 7.209	3.944 ± 3.599	6.063 ± 5.562	3.880 ± 3.467	5.469 ± 4.911
HEIGHT	JAPONICA	6.723 ± 5.845	3.736 ± 3.479	3.792 ± 3.659	3.572 ± 3.233	4.741 ± 4.626
HEIGHT	UKB_WCSG	6.752 ± 6.097	2.969 ± 2.556	5.021 ± 4.507	2.186 ± 2.026	3.688 ± 3.571
HEIGHT	CYTOSNP	4.280 ± 3.950	2.799 ± 2.642	3.311 ± 3.142	2.499 ± 2.320	3.134 ± 3.033
HEIGHT	PMRA	6.201 ± 6.068	3.620 ± 3.345	5.017 ± 4.399	3.365 ± 3.063	4.763 ± 4.370
HEIGHT	PMDA	5.698 ± 5.345	3.677 ± 3.614	5.143 ± 4.839	3.065 ± 2.778	4.490 ± 4.384
HEIGHT	OMNI2.5	2.376 ± 2.206	1.717 ± 1.623	2.235 ± 2.038	1.449 ± 1.414	2.111 ± 2.019
HEIGHT	OMNI5	1.974 ± 1.868	1.195 ± 1.177	1.939 ± 1.819	0.962 ± 0.868	1.573 ± 1.547
HEIGHT	LPS_0.5	4.309 ± 4.155	3.773 ± 3.713	5.049 ± 4.836	3.138 ± 2.670	4.541 ± 4.013
HEIGHT	LPS_0.75	3.904 ± 3.845	3.337 ± 3.053	4.451 ± 3.938	2.882 ± 2.530	3.750 ± 3.493
HEIGHT	LPS_1.0	3.479 ± 3.220	2.765 ± 2.685	4.110 ± 3.793	2.467 ± 2.252	3.463 ± 3.203
HEIGHT	LPS_1.25	3.341 ± 3.131	2.659 ± 2.680	3.588 ± 3.455	2.325 ± 2.108	3.130 ± 2.921
HEIGHT	LPS_1.5	3.051 ± 3.107	2.629 ± 2.402	3.269 ± 3.264	2.165 ± 1.927	3.196 ± 2.983
HEIGHT	LPS_2.0	2.928 ± 2.746	2.296 ± 2.289	2.981 ± 2.860	2.010 ± 1.809	2.810 ± 2.642
METABOLIC	GSA	7.146 ± 6.573	4.249 ± 4.086	5.975 ± 5.555	4.191 ± 3.908	5.215 ± 4.638
METABOLIC	JAPONICA	5.779 ± 5.359	3.513 ± 3.234	4.009 ± 3.430	3.813 ± 3.234	4.310 ± 4.041
METABOLIC	UKB_WCSG	6.687 ± 6.409	3.249 ± 2.982	5.135 ± 4.658	2.805 ± 2.471	3.737 ± 3.487
METAB	CYTOSN	3.893 ±	2.398 ±	3.300 ±	2.449 ±	2.953 ±

OLIC	P	3.561	2.274	2.834	2.281	2.788
METAB OLIC	PMRA	5.859 ± 5.504	3.998 ± 3.312	5.416 ± 4.889	3.601 ± 3.328	4.543 ± 4.159
METAB OLIC	PMDA	5.612 ± 4.945	3.310 ± 3.122	5.518 ± 4.883	3.302 ± 3.102	4.507 ± 4.277
METAB OLIC	OMNI2.5	2.407 ± 2.294	1.912 ± 1.727	2.552 ± 2.260	1.847 ± 1.747	2.245 ± 2.070
METAB OLIC	OMNI5	1.769 ± 1.695	1.287 ± 1.269	1.788 ± 1.727	1.151 ± 1.077	1.536 ± 1.497
METAB OLIC	LPS_0.5	4.097 ± 3.814	3.113 ± 2.918	5.100 ± 4.458	3.141 ± 2.938	4.331 ± 3.922
METAB OLIC	LPS_0.75	3.635 ± 3.370	2.614 ± 2.437	4.027 ± 3.706	2.605 ± 2.390	3.447 ± 3.190
METAB OLIC	LPS_1.0	2.967 ± 2.935	2.284 ± 2.213	3.549 ± 3.197	2.417 ± 2.230	3.172 ± 3.177
METAB OLIC	LPS_1.25	2.807 ± 2.651	2.033 ± 2.025	3.355 ± 2.943	2.102 ± 2.149	2.845 ± 2.566
METAB OLIC	LPS_1.5	2.630 ± 2.394	2.186 ± 2.030	3.124 ± 2.872	2.020 ± 1.835	2.601 ± 2.533
METAB OLIC	LPS_2.0	2.300 ± 2.113	1.917 ± 1.701	2.478 ± 2.270	1.820 ± 1.669	2.475 ± 2.288

Table S. 17 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.01

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.166 ± 6.461	3.868 ± 3.437	6.544 ± 5.648	4.647 ± 4.168	5.129 ± 4.471
BMI	JAPONICA	6.157 ± 5.748	3.259 ± 2.937	4.111 ± 3.709	4.091 ± 3.764	4.649 ± 3.886
BMI	UKB_WCSG	6.398 ± 5.879	3.168 ± 2.807	5.790 ± 4.822	2.982 ± 2.795	3.581 ± 3.238
BMI	CYTOSNP	4.105 ± 3.947	2.535 ± 2.450	4.041 ± 3.588	3.116 ± 2.883	3.419 ± 2.797
BMI	PMRA	6.126 ± 5.827	3.553 ± 3.019	5.814 ± 5.109	4.186 ± 3.919	5.016 ± 4.509
BMI	PMDA	5.740 ± 5.256	3.306 ± 3.095	6.026 ± 5.074	3.775 ± 3.478	4.218 ± 3.696
BMI	OMNI2.5	2.399 ± 2.202	1.680 ± 1.525	2.594 ± 2.258	1.793 ± 1.766	2.146 ± 1.866
BMI	OMNI5	1.977 ± 1.846	1.149 ± 1.075	1.955 ± 1.774	1.260 ± 1.167	1.598 ± 1.375
BMI	LPS_0.5	4.341 ± 4.119	3.491 ± 3.215	5.294 ± 4.784	3.845 ± 3.333	4.154 ± 3.887
BMI	LPS_0.75	3.730 ± 3.530	2.888 ± 2.538	4.625 ± 3.911	3.218 ± 2.923	3.780 ± 3.458
BMI	LPS_1.0	3.402 ± 3.327	2.532 ± 2.427	4.248 ± 3.631	2.860 ± 2.650	3.097 ± 2.795
BMI	LPS_1.25	3.078 ± 3.004	2.170 ± 2.084	3.892 ± 3.384	2.800 ± 2.652	2.950 ± 2.552
BMI	LPS_1.5	2.924 ± 2.786	2.116 ± 1.847	3.312 ± 2.929	2.425 ± 2.104	2.707 ± 2.469
BMI	LPS_2.0	2.543 ± 2.533	1.971 ± 1.788	2.880 ± 2.436	2.165 ± 2.033	2.495 ± 2.345
DIABETES	GSA	7.176 ± 6.712	4.116 ± 3.573	6.837 ± 5.936	5.331 ± 4.699	5.265 ± 4.631
DIABETES	JAPONICA	6.690 ± 6.290	3.285 ± 3.034	4.035 ± 4.048	4.250 ± 3.986	4.572 ± 4.063
DIABETES	UKB_WCSG	6.633 ± 6.334	3.305 ± 2.771	5.496 ± 4.687	3.421 ± 3.456	4.522 ± 4.063
DIABETES	CYTOSNP	4.440 ± 4.319	2.344 ± 2.179	3.980 ± 3.600	2.886 ± 2.684	3.558 ± 3.250
DIABETES	PMRA	5.877 ± 5.343	3.692 ± 2.981	5.842 ± 5.068	4.201 ± 4.024	5.263 ± 4.759
DIABETES	PMDA	5.720 ± 5.027	3.244 ± 2.935	5.519 ± 5.030	3.894 ± 3.595	4.889 ± 4.234
DIABETES	OMNI2.5	2.584 ± 2.393	1.575 ± 1.454	2.678 ± 2.387	1.969 ± 1.854	2.129 ± 1.910

DIABETES	OMNI5	2.372 ± 2.211	1.198 ± 1.099	2.159 ± 2.007	1.477 ± 1.393	1.782 ± 1.616
DIABETES	LPS_0.5	4.206 ± 3.926	3.204 ± 2.819	5.106 ± 4.479	4.132 ± 3.590	4.332 ± 3.848
DIABETES	LPS_0.75	3.642 ± 3.345	2.643 ± 2.476	4.401 ± 3.798	3.405 ± 3.004	4.031 ± 3.490
DIABETES	LPS_1.0	3.200 ± 3.037	2.433 ± 2.031	3.990 ± 3.467	3.148 ± 2.861	3.486 ± 3.031
DIABETES	LPS_1.25	3.019 ± 2.910	2.292 ± 2.103	3.519 ± 3.160	2.927 ± 2.608	2.986 ± 2.668
DIABETES	LPS_1.5	2.857 ± 2.558	2.104 ± 1.902	3.320 ± 2.859	2.775 ± 2.518	3.152 ± 2.682
DIABETES	LPS_2.0	2.505 ± 2.361	1.949 ± 1.807	2.961 ± 2.659	2.420 ± 2.234	2.724 ± 2.538
HEIGHT	GSA	7.764 ± 7.260	4.155 ± 3.585	5.850 ± 5.374	3.913 ± 3.683	5.527 ± 5.001
HEIGHT	JAPONICA	6.539 ± 6.004	3.804 ± 3.514	3.915 ± 3.530	3.342 ± 3.080	4.752 ± 4.537
HEIGHT	UKB_WCSG	6.809 ± 6.253	2.903 ± 2.643	4.837 ± 4.265	2.203 ± 2.037	3.879 ± 3.536
HEIGHT	CYTOSNP	4.235 ± 3.827	2.654 ± 2.299	3.455 ± 3.134	2.463 ± 2.343	3.419 ± 3.196
HEIGHT	PMRA	6.274 ± 6.094	3.808 ± 3.511	5.090 ± 4.365	3.331 ± 3.083	4.822 ± 4.459
HEIGHT	PMDA	5.719 ± 5.178	3.524 ± 3.491	5.427 ± 4.854	2.979 ± 2.832	4.534 ± 4.163
HEIGHT	OMNI2.5	2.392 ± 2.194	1.689 ± 1.503	2.356 ± 1.961	1.498 ± 1.459	2.079 ± 1.979
HEIGHT	OMNI5	2.021 ± 1.897	1.174 ± 1.049	1.873 ± 1.807	0.989 ± 0.992	1.566 ± 1.475
HEIGHT	LPS_0.5	4.518 ± 4.340	3.702 ± 3.355	5.035 ± 4.712	3.104 ± 2.847	4.511 ± 4.027
HEIGHT	LPS_0.75	4.082 ± 4.034	3.235 ± 2.955	4.427 ± 3.901	2.971 ± 2.582	3.883 ± 3.712
HEIGHT	LPS_1.0	3.720 ± 3.434	2.663 ± 2.356	4.204 ± 3.697	2.456 ± 2.362	3.348 ± 2.951
HEIGHT	LPS_1.25	3.611 ± 3.274	2.620 ± 2.429	3.633 ± 3.352	2.318 ± 2.111	3.239 ± 2.929
HEIGHT	LPS_1.5	3.319 ± 3.169	2.531 ± 2.422	3.344 ± 3.073	2.088 ± 1.997	3.103 ± 2.843
HEIGHT	LPS_2.0	3.046 ± 2.861	2.293 ± 2.109	3.055 ± 2.728	2.036 ± 1.902	2.734 ± 2.521
METABOLIC	GSA	7.587 ± 7.280	4.001 ± 3.504	6.458 ± 6.012	4.190 ± 3.712	5.581 ± 4.695
METABOLIC	JAPONICA	6.055 ± 5.785	3.377 ± 3.100	4.061 ± 3.628	4.009 ± 3.689	4.249 ± 3.792
METABOLIC	UKB_WCSG	6.828 ± 6.807	3.036 ± 2.740	5.720 ± 4.899	2.863 ± 2.619	3.925 ± 3.592
METAB	CYTOSN	4.050 ±	2.536 ±	3.612 ±	2.511 ±	3.107 ±

OLIC	P	3.767	2.299	3.096	2.382	2.764
METAB OLIC	PMRA	6.076 ± 5.624	3.751 ± 3.360	5.930 ± 5.385	3.729 ± 3.296	4.680 ± 4.350
METAB OLIC	PMDA	5.711 ± 5.172	3.217 ± 2.993	5.875 ± 5.016	3.525 ± 3.171	4.504 ± 4.215
METAB OLIC	OMNI2.5	2.544 ± 2.516	1.810 ± 1.639	2.644 ± 2.298	1.889 ± 1.690	2.232 ± 2.037
METAB OLIC	OMNI5	1.743 ± 1.725	1.174 ± 1.064	1.780 ± 1.657	1.100 ± 1.057	1.546 ± 1.488
METAB OLIC	LPS_0.5	4.254 ± 4.322	3.050 ± 2.814	5.440 ± 4.935	3.499 ± 3.289	4.476 ± 4.072
METAB OLIC	LPS_0.75	3.816 ± 3.571	2.676 ± 2.461	4.262 ± 3.762	2.693 ± 2.334	3.699 ± 3.368
METAB OLIC	LPS_1.0	3.301 ± 3.276	2.266 ± 1.965	3.659 ± 3.300	2.673 ± 2.317	3.049 ± 2.877
METAB OLIC	LPS_1.25	3.150 ± 2.999	2.188 ± 1.937	3.591 ± 3.074	2.375 ± 2.221	2.910 ± 2.646
METAB OLIC	LPS_1.5	2.871 ± 2.678	2.319 ± 2.184	3.234 ± 2.906	2.234 ± 1.931	2.702 ± 2.434
METAB OLIC	LPS_2.0	2.604 ± 2.562	1.879 ± 1.671	2.671 ± 2.468	1.979 ± 1.766	2.451 ± 2.395

Table S. 18 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.1

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.444 ± 6.721	4.658 ± 4.285	7.156 ± 6.495	5.107 ± 4.593	5.697 ± 4.929
BMI	JAPONICA	6.339 ± 5.937	4.229 ± 3.936	4.542 ± 3.866	4.374 ± 4.045	4.901 ± 4.236
BMI	UKB_WCSG	7.196 ± 6.703	3.361 ± 2.959	6.019 ± 5.391	3.077 ± 2.942	4.205 ± 3.639
BMI	CYTOSNP	4.328 ± 4.262	2.905 ± 2.571	4.331 ± 3.826	3.599 ± 3.449	4.072 ± 3.540
BMI	PMRA	6.383 ± 6.222	4.045 ± 3.615	6.291 ± 5.857	4.806 ± 4.194	5.516 ± 5.146
BMI	PMDA	6.082 ± 5.685	3.763 ± 3.218	6.067 ± 5.530	4.378 ± 4.045	4.887 ± 4.155
BMI	OMNI2.5	2.544 ± 2.481	1.994 ± 1.745	2.870 ± 2.370	1.968 ± 1.890	2.274 ± 2.052
BMI	OMNI5	2.041 ± 1.912	1.355 ± 1.179	2.049 ± 1.834	1.281 ± 1.280	1.618 ± 1.441
BMI	LPS_0.5	4.901 ± 4.721	4.012 ± 3.706	5.615 ± 5.037	4.265 ± 4.054	4.756 ± 4.176
BMI	LPS_0.75	4.035 ± 3.967	3.481 ± 3.164	5.270 ± 4.721	3.648 ± 3.195	4.144 ± 3.656
BMI	LPS_1.0	3.653 ± 3.453	2.750 ± 2.672	4.657 ± 4.024	3.261 ± 3.016	3.658 ± 3.210
BMI	LPS_1.25	3.500 ± 3.174	2.829 ± 2.497	4.110 ± 3.812	3.136 ± 2.978	3.203 ± 2.908
BMI	LPS_1.5	3.178 ± 3.030	2.537 ± 2.330	3.637 ± 3.151	2.732 ± 2.536	3.180 ± 2.790
BMI	LPS_2.0	2.756 ± 2.561	2.335 ± 2.271	3.382 ± 2.905	2.354 ± 2.105	2.804 ± 2.412
DIABETES	GSA	7.440 ± 6.979	4.300 ± 3.759	7.583 ± 6.828	4.795 ± 4.541	5.544 ± 5.203
DIABETES	JAPONICA	6.464 ± 6.270	3.311 ± 2.951	4.325 ± 4.347	3.985 ± 3.460	4.620 ± 4.155
DIABETES	UKB_WCSG	6.799 ± 6.650	3.128 ± 2.637	6.286 ± 5.637	3.189 ± 2.979	4.479 ± 4.254
DIABETES	CYTOSNP	4.532 ± 4.402	2.377 ± 2.078	4.364 ± 3.896	2.797 ± 2.458	3.706 ± 3.419
DIABETES	PMRA	6.223 ± 5.856	3.800 ± 3.366	6.467 ± 5.876	4.169 ± 3.740	5.314 ± 4.919
DIABETES	PMDA	5.832 ± 5.668	3.323 ± 3.024	6.386 ± 5.726	3.476 ± 3.220	4.950 ± 4.668
DIABETES	OMNI2.5	2.662 ± 2.347	1.573 ± 1.448	2.940 ± 2.563	1.732 ± 1.588	2.413 ± 2.174

DIABETES	OMNI5	2.383 ± 2.248	1.229 ± 1.166	2.378 ± 2.180	1.302 ± 1.256	1.967 ± 1.858
DIABETES	LPS_0.5	4.580 ± 4.436	3.453 ± 2.836	5.771 ± 5.135	3.958 ± 3.557	4.426 ± 4.247
DIABETES	LPS_0.75	4.002 ± 3.777	3.119 ± 2.823	4.770 ± 4.188	3.241 ± 2.771	4.135 ± 3.874
DIABETES	LPS_1.0	3.526 ± 3.307	2.393 ± 2.279	4.274 ± 4.049	2.942 ± 2.864	3.445 ± 3.201
DIABETES	LPS_1.25	3.338 ± 3.265	2.444 ± 2.134	3.914 ± 3.502	2.677 ± 2.261	3.010 ± 2.822
DIABETES	LPS_1.5	3.266 ± 3.240	1.978 ± 1.950	3.629 ± 3.250	2.567 ± 2.343	3.144 ± 2.938
DIABETES	LPS_2.0	2.698 ± 2.544	2.021 ± 1.826	3.228 ± 2.920	2.239 ± 2.006	2.760 ± 2.583
HEIGHT	GSA	7.639 ± 6.802	4.024 ± 3.630	5.952 ± 5.233	3.688 ± 3.342	5.759 ± 5.077
HEIGHT	JAPONICA	6.483 ± 5.759	3.770 ± 3.584	4.056 ± 3.597	3.205 ± 2.879	4.501 ± 4.573
HEIGHT	UKB_WCSG	6.776 ± 6.017	2.924 ± 2.667	4.808 ± 4.290	2.207 ± 1.961	3.986 ± 3.690
HEIGHT	CYTOSNP	4.447 ± 4.069	2.981 ± 2.764	3.536 ± 3.220	2.340 ± 2.246	3.584 ± 3.456
HEIGHT	PMRA	6.329 ± 6.047	3.885 ± 3.710	5.036 ± 4.243	3.244 ± 2.877	4.753 ± 4.615
HEIGHT	PMDA	5.789 ± 4.944	3.620 ± 3.525	5.508 ± 5.089	2.856 ± 2.706	4.569 ± 4.351
HEIGHT	OMNI2.5	2.460 ± 2.246	1.830 ± 1.682	2.329 ± 1.930	1.415 ± 1.289	2.228 ± 2.137
HEIGHT	OMNI5	2.001 ± 1.866	1.217 ± 1.156	1.795 ± 1.661	0.972 ± 0.920	1.562 ± 1.437
HEIGHT	LPS_0.5	4.913 ± 4.529	3.510 ± 3.148	5.206 ± 4.948	3.060 ± 2.743	4.719 ± 4.286
HEIGHT	LPS_0.75	4.327 ± 4.075	3.215 ± 2.955	4.397 ± 3.882	2.894 ± 2.542	4.001 ± 3.838
HEIGHT	LPS_1.0	3.794 ± 3.549	2.762 ± 2.439	4.191 ± 3.652	2.399 ± 2.185	3.525 ± 3.182
HEIGHT	LPS_1.25	3.737 ± 3.332	2.805 ± 2.680	3.673 ± 3.316	2.253 ± 1.958	3.262 ± 3.310
HEIGHT	LPS_1.5	3.559 ± 3.316	2.457 ± 2.263	3.336 ± 3.019	1.987 ± 1.845	3.159 ± 2.919
HEIGHT	LPS_2.0	3.044 ± 2.741	2.269 ± 2.127	3.196 ± 2.817	1.957 ± 1.804	2.879 ± 2.638
METABOLIC	GSA	7.599 ± 6.769	4.156 ± 3.730	7.074 ± 6.270	4.318 ± 3.962	5.828 ± 5.151
METABOLIC	JAPONICA	6.168 ± 5.740	3.462 ± 3.282	4.240 ± 4.017	4.281 ± 3.863	4.696 ± 4.155
METABOLIC	UKB_WCSG	7.247 ± 6.807	2.952 ± 2.839	6.096 ± 5.153	2.937 ± 2.769	3.949 ± 3.493
METAB	CYTOSN	4.222 ±	2.525 ±	4.119 ±	2.994 ±	3.600 ±

OLIC	P	3.856	2.205	3.611	2.820	3.128
METAB OLIC	PMRA	5.963 ± 5.423	4.055 ± 3.684	6.393 ± 5.473	3.974 ± 3.524	5.030 ± 4.638
METAB OLIC	PMDA	5.468 ± 4.899	3.332 ± 3.157	6.177 ± 5.653	3.794 ± 3.683	4.711 ± 4.066
METAB OLIC	OMNI2.5	2.464 ± 2.344	1.801 ± 1.699	2.686 ± 2.569	1.926 ± 1.852	2.319 ± 2.102
METAB OLIC	OMNI5	1.816 ± 1.717	1.284 ± 1.256	1.894 ± 1.760	1.173 ± 1.134	1.714 ± 1.597
METAB OLIC	LPS_0.5	4.495 ± 4.143	3.508 ± 3.286	5.988 ± 5.435	3.870 ± 3.647	4.726 ± 4.218
METAB OLIC	LPS_0.75	3.980 ± 3.715	2.842 ± 2.674	4.763 ± 4.423	3.252 ± 3.023	3.781 ± 3.385
METAB OLIC	LPS_1.0	3.427 ± 3.260	2.606 ± 2.443	4.293 ± 3.850	2.975 ± 2.688	3.503 ± 3.246
METAB OLIC	LPS_1.25	3.139 ± 2.911	2.329 ± 2.313	4.049 ± 3.783	2.654 ± 2.575	3.291 ± 2.962
METAB OLIC	LPS_1.5	2.819 ± 2.722	2.523 ± 2.352	3.741 ± 3.692	2.602 ± 2.376	3.019 ± 2.725
METAB OLIC	LPS_2.0	2.623 ± 2.605	2.023 ± 1.973	3.099 ± 2.929	2.183 ± 1.914	2.673 ± 2.465

Table S. 19 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.2

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.692 ± 7.002	4.600 ± 4.081	7.153 ± 6.678	5.209 ± 4.644	5.891 ± 5.097
BMI	JAPONICA	6.737 ± 6.455	4.092 ± 3.782	4.606 ± 3.966	4.574 ± 4.069	4.984 ± 4.235
BMI	UKB_WCSG	7.384 ± 6.865	3.292 ± 2.857	6.106 ± 5.374	3.111 ± 2.922	4.151 ± 3.559
BMI	CYTOSNP	4.599 ± 4.478	2.982 ± 2.695	4.612 ± 3.864	3.694 ± 3.321	4.175 ± 3.501
BMI	PMRA	6.685 ± 6.329	4.028 ± 3.565	6.280 ± 5.949	4.781 ± 4.235	5.601 ± 4.994
BMI	PMDA	6.319 ± 5.911	3.741 ± 3.180	6.054 ± 5.542	4.443 ± 4.016	5.020 ± 4.165
BMI	OMNI2.5	2.621 ± 2.546	1.951 ± 1.647	2.893 ± 2.446	2.042 ± 1.908	2.437 ± 2.027
BMI	OMNI5	2.106 ± 1.994	1.290 ± 1.116	2.078 ± 1.862	1.368 ± 1.289	1.622 ± 1.468
BMI	LPS_0.5	5.084 ± 5.093	3.858 ± 3.362	5.795 ± 5.140	4.525 ± 4.062	4.777 ± 4.239
BMI	LPS_0.75	4.195 ± 4.008	3.459 ± 3.185	5.443 ± 4.839	3.708 ± 3.216	4.219 ± 3.742
BMI	LPS_1.0	3.773 ± 3.561	2.802 ± 2.468	4.598 ± 4.042	3.222 ± 2.984	3.699 ± 3.216
BMI	LPS_1.25	3.526 ± 3.244	2.780 ± 2.367	4.224 ± 3.915	3.179 ± 2.870	3.245 ± 3.010
BMI	LPS_1.5	3.198 ± 3.080	2.486 ± 2.311	3.762 ± 3.305	2.731 ± 2.578	3.289 ± 2.947
BMI	LPS_2.0	2.875 ± 2.642	2.334 ± 2.083	3.435 ± 2.923	2.396 ± 2.004	2.896 ± 2.466
DIABETES	GSA	7.466 ± 7.119	4.339 ± 3.966	7.723 ± 7.070	4.731 ± 4.380	5.692 ± 5.135
DIABETES	JAPONICA	6.611 ± 6.375	3.402 ± 2.945	4.416 ± 4.216	3.903 ± 3.584	4.598 ± 4.211
DIABETES	UKB_WCSG	7.000 ± 6.852	3.101 ± 2.843	6.441 ± 5.506	3.069 ± 2.769	4.558 ± 4.350
DIABETES	CYTOSNP	4.712 ± 4.752	2.407 ± 2.308	4.413 ± 3.989	2.779 ± 2.450	3.645 ± 3.373
DIABETES	PMRA	6.234 ± 5.796	3.682 ± 3.587	6.444 ± 5.648	3.996 ± 3.721	5.417 ± 4.928
DIABETES	PMDA	5.764 ± 5.489	3.384 ± 3.053	6.211 ± 5.688	3.543 ± 3.112	4.756 ± 4.515
DIABETES	OMNI2.5	2.513 ± 2.318	1.525 ± 1.471	2.970 ± 2.596	1.732 ± 1.585	2.313 ± 2.126

DIABETES	OMNI5	2.330 ± 2.189	1.238 ± 1.161	2.398 ± 2.185	1.307 ± 1.233	1.951 ± 1.809
DIABETES	LPS_0.5	4.583 ± 4.432	3.497 ± 3.119	5.887 ± 4.984	3.852 ± 3.482	4.501 ± 4.122
DIABETES	LPS_0.75	3.989 ± 3.944	3.186 ± 2.855	4.757 ± 4.274	3.262 ± 2.859	4.079 ± 3.709
DIABETES	LPS_1.0	3.738 ± 3.401	2.440 ± 2.310	4.353 ± 4.184	2.852 ± 2.677	3.359 ± 3.007
DIABETES	LPS_1.25	3.399 ± 3.381	2.457 ± 2.177	3.832 ± 3.351	2.652 ± 2.342	3.004 ± 2.691
DIABETES	LPS_1.5	3.404 ± 3.248	1.910 ± 2.036	3.693 ± 3.262	2.605 ± 2.300	3.080 ± 2.687
DIABETES	LPS_2.0	2.804 ± 2.833	2.035 ± 1.877	3.320 ± 2.974	2.227 ± 1.986	2.652 ± 2.483
HEIGHT	GSA	7.859 ± 6.971	4.039 ± 3.540	5.945 ± 5.191	3.624 ± 3.221	5.846 ± 5.293
HEIGHT	JAPONICA	6.395 ± 5.697	3.633 ± 3.343	4.152 ± 3.582	3.201 ± 2.791	4.698 ± 4.615
HEIGHT	UKB_WCSG	6.829 ± 6.104	3.020 ± 2.649	4.837 ± 4.295	2.148 ± 1.928	3.982 ± 3.723
HEIGHT	CYTOSNP	4.477 ± 4.065	3.015 ± 2.624	3.723 ± 3.285	2.381 ± 2.266	3.577 ± 3.485
HEIGHT	PMRA	6.301 ± 6.067	3.960 ± 3.592	5.104 ± 4.148	3.087 ± 2.811	4.783 ± 4.747
HEIGHT	PMDA	5.764 ± 5.037	3.495 ± 3.292	5.521 ± 4.868	2.823 ± 2.739	4.585 ± 4.439
HEIGHT	OMNI2.5	2.526 ± 2.320	1.899 ± 1.692	2.396 ± 2.048	1.418 ± 1.357	2.338 ± 2.185
HEIGHT	OMNI5	2.089 ± 1.963	1.178 ± 1.086	1.875 ± 1.680	0.942 ± 0.919	1.558 ± 1.413
HEIGHT	LPS_0.5	4.863 ± 4.434	3.360 ± 2.970	5.285 ± 4.917	3.085 ± 2.695	4.745 ± 4.480
HEIGHT	LPS_0.75	4.382 ± 4.100	3.246 ± 2.789	4.460 ± 3.957	2.839 ± 2.477	4.020 ± 3.789
HEIGHT	LPS_1.0	3.796 ± 3.501	2.823 ± 2.460	4.276 ± 3.765	2.383 ± 2.154	3.545 ± 3.336
HEIGHT	LPS_1.25	3.646 ± 3.310	2.657 ± 2.500	3.807 ± 3.323	2.194 ± 1.965	3.321 ± 3.248
HEIGHT	LPS_1.5	3.480 ± 3.363	2.396 ± 2.142	3.424 ± 3.056	1.939 ± 1.714	3.135 ± 3.015
HEIGHT	LPS_2.0	3.001 ± 2.639	2.122 ± 1.895	3.244 ± 2.933	1.928 ± 1.713	2.895 ± 2.616
METABOLIC	GSA	7.622 ± 6.709	4.053 ± 3.627	7.052 ± 6.317	4.555 ± 4.014	5.931 ± 5.030
METABOLIC	JAPONICA	6.127 ± 5.673	3.362 ± 3.317	4.408 ± 4.030	4.340 ± 3.837	4.655 ± 4.222
METABOLIC	UKB_WCSG	7.194 ± 6.918	2.869 ± 2.673	6.019 ± 5.165	2.876 ± 2.671	3.902 ± 3.620
METAB	CYTOSN	4.181 ±	2.470 ±	4.203 ±	3.045 ±	3.499 ±

OLIC	P	3.742	2.310	3.609	2.946	3.063
METAB OLIC	PMRA	5.969 ± 5.816	4.023 ± 3.792	6.404 ± 5.558	4.032 ± 3.582	5.132 ± 4.754
METAB OLIC	PMDA	5.478 ± 4.987	3.267 ± 3.162	6.072 ± 5.553	3.871 ± 3.723	4.631 ± 4.246
METAB OLIC	OMNI2.5	2.477 ± 2.317	1.762 ± 1.689	2.686 ± 2.497	1.961 ± 1.874	2.242 ± 2.016
METAB OLIC	OMNI5	1.882 ± 1.808	1.209 ± 1.189	1.851 ± 1.684	1.208 ± 1.125	1.611 ± 1.459
METAB OLIC	LPS_0.5	4.361 ± 4.071	3.352 ± 3.164	5.859 ± 5.169	3.962 ± 3.596	4.855 ± 4.213
METAB OLIC	LPS_0.75	4.044 ± 3.744	2.824 ± 2.633	4.846 ± 4.348	3.179 ± 2.960	3.898 ± 3.403
METAB OLIC	LPS_1.0	3.577 ± 3.340	2.521 ± 2.357	4.318 ± 3.908	3.131 ± 2.769	3.570 ± 3.103
METAB OLIC	LPS_1.25	3.182 ± 2.941	2.282 ± 2.272	3.943 ± 3.670	2.684 ± 2.605	3.378 ± 2.996
METAB OLIC	LPS_1.5	2.867 ± 2.755	2.350 ± 2.246	3.686 ± 3.465	2.605 ± 2.306	3.075 ± 2.705
METAB OLIC	LPS_2.0	2.626 ± 2.540	2.108 ± 1.976	3.076 ± 2.841	2.260 ± 2.013	2.707 ± 2.433

Table S. 20 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.3

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.658 ± 6.875	4.623 ± 4.173	7.289 ± 6.801	5.437 ± 4.746	5.971 ± 5.267
BMI	JAPONICA	6.654 ± 6.232	4.153 ± 3.792	4.634 ± 4.028	4.611 ± 4.150	4.990 ± 4.207
BMI	UKB_WCSG	7.482 ± 6.908	3.427 ± 2.892	5.974 ± 5.420	3.130 ± 2.953	4.184 ± 3.691
BMI	CYTOSNP	4.626 ± 4.448	3.119 ± 2.784	4.725 ± 3.837	3.816 ± 3.417	4.217 ± 3.586
BMI	PMRA	6.654 ± 6.310	4.157 ± 3.705	6.373 ± 6.135	4.979 ± 4.557	5.609 ± 5.013
BMI	PMDA	6.309 ± 5.858	3.913 ± 3.245	6.294 ± 5.564	4.456 ± 4.103	5.041 ± 4.272
BMI	OMNI2.5	2.525 ± 2.528	2.021 ± 1.630	2.968 ± 2.496	2.092 ± 1.992	2.417 ± 2.136
BMI	OMNI5	2.132 ± 2.054	1.339 ± 1.139	2.115 ± 1.947	1.334 ± 1.354	1.671 ± 1.466
BMI	LPS_0.5	5.040 ± 5.034	4.028 ± 3.458	6.035 ± 5.250	4.636 ± 4.225	4.908 ± 4.362
BMI	LPS_0.75	4.173 ± 3.963	3.555 ± 3.247	5.528 ± 5.079	3.682 ± 3.282	4.331 ± 3.813
BMI	LPS_1.0	3.749 ± 3.542	2.756 ± 2.537	4.766 ± 4.064	3.329 ± 3.074	3.697 ± 3.204
BMI	LPS_1.25	3.491 ± 3.296	2.959 ± 2.512	4.249 ± 3.848	3.201 ± 3.020	3.352 ± 3.064
BMI	LPS_1.5	3.104 ± 3.033	2.604 ± 2.333	3.819 ± 3.452	2.711 ± 2.644	3.255 ± 3.084
BMI	LPS_2.0	2.899 ± 2.636	2.462 ± 2.224	3.599 ± 3.055	2.448 ± 2.113	2.879 ± 2.521
DIABETES	GSA	7.335 ± 6.928	4.209 ± 3.808	7.827 ± 7.331	4.537 ± 4.214	5.661 ± 4.870
DIABETES	JAPONICA	6.581 ± 6.521	3.457 ± 3.063	4.626 ± 4.337	4.046 ± 3.689	4.642 ± 4.185
DIABETES	UKB_WCSG	7.022 ± 6.811	3.245 ± 2.839	6.467 ± 5.821	3.017 ± 2.708	4.560 ± 4.315
DIABETES	CYTOSNP	4.691 ± 4.600	2.337 ± 2.300	4.587 ± 4.072	2.731 ± 2.395	3.724 ± 3.342
DIABETES	PMRA	6.350 ± 5.903	3.732 ± 3.731	6.742 ± 5.962	3.931 ± 3.644	5.525 ± 5.133
DIABETES	PMDA	5.880 ± 5.787	3.496 ± 3.118	6.441 ± 5.892	3.550 ± 3.038	4.751 ± 4.452
DIABETES	OMNI2.5	2.578 ± 2.472	1.623 ± 1.441	3.053 ± 2.721	1.759 ± 1.599	2.396 ± 2.168

DIABETES	OMNI5	2.305 ± 2.207	1.208 ± 1.158	2.422 ± 2.238	1.296 ± 1.216	1.998 ± 1.884
DIABETES	LPS_0.5	4.615 ± 4.475	3.528 ± 2.999	6.087 ± 5.135	3.714 ± 3.422	4.443 ± 4.194
DIABETES	LPS_0.75	3.931 ± 4.007	3.166 ± 2.765	4.981 ± 4.491	3.137 ± 2.768	4.056 ± 3.773
DIABETES	LPS_1.0	3.593 ± 3.442	2.408 ± 2.182	4.488 ± 4.247	2.763 ± 2.652	3.359 ± 3.070
DIABETES	LPS_1.25	3.393 ± 3.277	2.471 ± 2.220	3.957 ± 3.478	2.578 ± 2.227	3.051 ± 2.864
DIABETES	LPS_1.5	3.330 ± 3.197	2.040 ± 1.999	3.851 ± 3.549	2.454 ± 2.233	3.132 ± 2.746
DIABETES	LPS_2.0	2.817 ± 2.793	2.103 ± 1.962	3.451 ± 3.193	2.100 ± 1.936	2.676 ± 2.531
HEIGHT	GSA	7.841 ± 6.974	4.044 ± 3.603	6.013 ± 5.257	3.588 ± 3.235	5.786 ± 5.129
HEIGHT	JAPONICA	6.377 ± 5.656	3.620 ± 3.354	4.120 ± 3.469	3.248 ± 2.886	4.654 ± 4.591
HEIGHT	UKB_WCSG	6.806 ± 6.116	2.930 ± 2.558	4.984 ± 4.377	2.081 ± 1.929	3.981 ± 3.627
HEIGHT	CYTOSNP	4.472 ± 4.185	3.026 ± 2.673	3.693 ± 3.313	2.358 ± 2.237	3.596 ± 3.407
HEIGHT	PMRA	6.326 ± 6.055	3.881 ± 3.545	5.249 ± 4.287	3.092 ± 2.792	4.751 ± 4.636
HEIGHT	PMDA	5.754 ± 4.995	3.457 ± 3.258	5.543 ± 4.933	2.807 ± 2.641	4.559 ± 4.352
HEIGHT	OMNI2.5	2.519 ± 2.303	1.859 ± 1.703	2.370 ± 2.044	1.427 ± 1.314	2.304 ± 2.125
HEIGHT	OMNI5	2.040 ± 1.931	1.125 ± 1.035	1.818 ± 1.702	0.944 ± 0.942	1.526 ± 1.420
HEIGHT	LPS_0.5	4.852 ± 4.500	3.325 ± 2.883	5.280 ± 4.930	3.102 ± 2.709	4.756 ± 4.430
HEIGHT	LPS_0.75	4.378 ± 4.064	3.179 ± 2.817	4.456 ± 4.105	2.817 ± 2.467	3.986 ± 3.743
HEIGHT	LPS_1.0	3.767 ± 3.493	2.800 ± 2.397	4.321 ± 3.895	2.343 ± 2.163	3.576 ± 3.306
HEIGHT	LPS_1.25	3.590 ± 3.276	2.736 ± 2.579	3.786 ± 3.357	2.188 ± 2.045	3.307 ± 3.194
HEIGHT	LPS_1.5	3.517 ± 3.297	2.428 ± 2.117	3.442 ± 3.058	1.934 ± 1.759	3.117 ± 2.988
HEIGHT	LPS_2.0	3.016 ± 2.708	2.213 ± 1.971	3.303 ± 2.935	1.879 ± 1.725	2.909 ± 2.646
METABOLIC	GSA	7.482 ± 6.585	3.998 ± 3.555	7.255 ± 6.608	4.565 ± 4.094	5.888 ± 5.248
METABOLIC	JAPONICA	6.195 ± 5.751	3.289 ± 3.193	4.679 ± 4.195	4.290 ± 3.712	4.783 ± 4.378
METABOLIC	UKB_WCSG	7.142 ± 6.786	2.874 ± 2.614	6.172 ± 5.298	2.854 ± 2.695	3.821 ± 3.592
METAB	CYTOSN	4.258 ±	2.536 ±	4.392 ±	3.116 ±	3.509 ±

OLIC	P	3.905	2.356	3.747	3.037	2.996
METAB OLIC	PMRA	5.921 ± 5.564	4.043 ± 3.630	6.450 ± 5.848	4.043 ± 3.607	5.195 ± 4.829
METAB OLIC	PMDA	5.395 ± 5.001	3.222 ± 3.009	6.220 ± 5.748	3.868 ± 3.727	4.843 ± 4.381
METAB OLIC	OMNI2.5	2.443 ± 2.319	1.726 ± 1.670	2.787 ± 2.591	1.956 ± 1.894	2.249 ± 1.969
METAB OLIC	OMNI5	1.812 ± 1.705	1.193 ± 1.160	1.947 ± 1.815	1.225 ± 1.178	1.596 ± 1.450
METAB OLIC	LPS_0.5	4.373 ± 4.055	3.232 ± 2.937	5.970 ± 5.245	4.001 ± 3.636	4.835 ± 4.229
METAB OLIC	LPS_0.75	3.962 ± 3.636	2.809 ± 2.542	4.939 ± 4.613	3.337 ± 3.056	4.004 ± 3.510
METAB OLIC	LPS_1.0	3.554 ± 3.319	2.518 ± 2.298	4.469 ± 4.030	3.133 ± 2.782	3.676 ± 3.234
METAB OLIC	LPS_1.25	3.136 ± 2.922	2.261 ± 2.142	4.086 ± 3.781	2.729 ± 2.609	3.441 ± 2.914
METAB OLIC	LPS_1.5	2.846 ± 2.766	2.382 ± 2.173	3.740 ± 3.513	2.649 ± 2.423	3.070 ± 2.694
METAB OLIC	LPS_2.0	2.576 ± 2.472	2.090 ± 1.961	3.134 ± 2.872	2.288 ± 2.029	2.807 ± 2.578

Table S. 21 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 0.5

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.676 ± 7.077	4.646 ± 4.127	7.376 ± 6.985	5.465 ± 4.926	6.040 ± 5.275
BMI	JAPONICA	6.841 ± 6.526	4.246 ± 3.885	4.814 ± 4.203	4.577 ± 4.154	4.825 ± 4.247
BMI	UKB_WCSG	7.428 ± 6.868	3.273 ± 2.837	6.004 ± 5.517	3.101 ± 2.944	4.177 ± 3.757
BMI	CYTOSNP	4.595 ± 4.501	3.123 ± 2.714	4.858 ± 3.983	3.849 ± 3.380	4.185 ± 3.526
BMI	PMRA	6.674 ± 6.343	4.077 ± 3.465	6.394 ± 6.292	4.931 ± 4.598	5.591 ± 4.970
BMI	PMDA	6.317 ± 5.951	3.888 ± 3.256	6.354 ± 5.697	4.441 ± 4.161	4.995 ± 4.248
BMI	OMNI2.5	2.521 ± 2.458	2.034 ± 1.638	2.869 ± 2.556	2.166 ± 2.084	2.378 ± 2.128
BMI	OMNI5	2.116 ± 2.005	1.391 ± 1.195	2.125 ± 1.885	1.387 ± 1.368	1.625 ± 1.483
BMI	LPS_0.5	5.132 ± 4.949	4.070 ± 3.490	6.187 ± 5.419	4.636 ± 4.284	4.945 ± 4.424
BMI	LPS_0.75	4.244 ± 4.143	3.623 ± 3.060	5.615 ± 5.113	3.759 ± 3.347	4.325 ± 3.728
BMI	LPS_1.0	3.790 ± 3.575	2.847 ± 2.623	4.805 ± 4.149	3.388 ± 3.142	3.635 ± 3.340
BMI	LPS_1.25	3.561 ± 3.426	2.844 ± 2.411	4.284 ± 3.861	3.193 ± 3.071	3.309 ± 3.061
BMI	LPS_1.5	3.230 ± 3.165	2.492 ± 2.319	3.803 ± 3.516	2.799 ± 2.527	3.270 ± 2.978
BMI	LPS_2.0	2.964 ± 2.720	2.406 ± 2.145	3.649 ± 2.999	2.534 ± 2.189	2.840 ± 2.531
DIABETES	GSA	7.353 ± 6.740	4.171 ± 3.753	7.812 ± 7.232	4.505 ± 4.066	5.696 ± 4.995
DIABETES	JAPONICA	6.602 ± 6.280	3.628 ± 3.274	4.719 ± 4.412	4.044 ± 3.832	4.839 ± 4.358
DIABETES	UKB_WCSG	7.083 ± 6.681	3.146 ± 2.885	6.622 ± 5.938	3.066 ± 2.763	4.524 ± 4.274
DIABETES	CYTOSNP	4.642 ± 4.485	2.470 ± 2.255	4.518 ± 4.015	2.755 ± 2.338	3.762 ± 3.589
DIABETES	PMRA	6.412 ± 5.816	3.971 ± 3.790	6.679 ± 5.833	4.056 ± 3.679	5.657 ± 4.969
DIABETES	PMDA	5.902 ± 5.620	3.636 ± 3.118	6.674 ± 5.829	3.721 ± 3.207	4.774 ± 4.655
DIABETES	OMNI2.5	2.617 ± 2.351	1.658 ± 1.557	3.010 ± 2.668	1.744 ± 1.570	2.373 ± 2.240

DIABETES	OMNI5	2.218 ± 2.083	1.232 ± 1.205	2.431 ± 2.192	1.261 ± 1.171	1.974 ± 1.883
DIABETES	LPS_0.5	4.647 ± 4.283	3.485 ± 2.982	6.120 ± 5.399	3.747 ± 3.450	4.417 ± 4.179
DIABETES	LPS_0.75	4.035 ± 3.964	3.133 ± 2.867	5.050 ± 4.429	3.194 ± 2.871	4.075 ± 3.811
DIABETES	LPS_1.0	3.622 ± 3.287	2.447 ± 2.242	4.503 ± 4.278	2.783 ± 2.650	3.424 ± 3.063
DIABETES	LPS_1.25	3.435 ± 3.406	2.510 ± 2.202	3.921 ± 3.447	2.564 ± 2.193	3.058 ± 2.748
DIABETES	LPS_1.5	3.385 ± 3.068	2.174 ± 2.142	3.825 ± 3.482	2.405 ± 2.174	3.250 ± 2.875
DIABETES	LPS_2.0	2.758 ± 2.738	2.070 ± 1.887	3.685 ± 3.210	2.170 ± 1.986	2.759 ± 2.594
HEIGHT	GSA	7.849 ± 7.013	4.124 ± 3.635	6.064 ± 5.136	3.570 ± 3.252	5.803 ± 5.202
HEIGHT	JAPONICA	6.300 ± 5.671	3.698 ± 3.401	4.175 ± 3.510	3.153 ± 2.791	4.552 ± 4.490
HEIGHT	UKB_WCSG	6.746 ± 6.042	2.928 ± 2.635	4.986 ± 4.415	2.087 ± 1.942	3.963 ± 3.639
HEIGHT	CYTOSNP	4.440 ± 4.175	3.022 ± 2.773	3.703 ± 3.219	2.318 ± 2.231	3.631 ± 3.345
HEIGHT	PMRA	6.223 ± 6.046	3.881 ± 3.628	5.238 ± 4.280	3.117 ± 2.802	4.794 ± 4.615
HEIGHT	PMDA	5.656 ± 5.029	3.457 ± 3.261	5.560 ± 4.966	2.797 ± 2.609	4.570 ± 4.398
HEIGHT	OMNI2.5	2.515 ± 2.262	1.885 ± 1.707	2.373 ± 2.049	1.419 ± 1.272	2.249 ± 2.094
HEIGHT	OMNI5	2.060 ± 1.929	1.177 ± 1.100	1.895 ± 1.730	0.931 ± 0.940	1.523 ± 1.370
HEIGHT	LPS_0.5	4.919 ± 4.513	3.278 ± 2.887	5.248 ± 4.878	3.035 ± 2.736	4.761 ± 4.394
HEIGHT	LPS_0.75	4.353 ± 3.989	3.163 ± 2.852	4.504 ± 4.097	2.844 ± 2.466	4.012 ± 3.787
HEIGHT	LPS_1.0	3.850 ± 3.504	2.821 ± 2.398	4.308 ± 3.782	2.323 ± 2.183	3.669 ± 3.423
HEIGHT	LPS_1.25	3.601 ± 3.260	2.692 ± 2.511	3.843 ± 3.273	2.217 ± 2.069	3.351 ± 3.282
HEIGHT	LPS_1.5	3.468 ± 3.323	2.430 ± 2.154	3.442 ± 3.067	1.951 ± 1.778	3.152 ± 2.934
HEIGHT	LPS_2.0	3.040 ± 2.727	2.264 ± 2.054	3.307 ± 2.972	1.937 ± 1.755	2.913 ± 2.691
METABOLIC	GSA	7.394 ± 6.633	3.985 ± 3.388	7.344 ± 6.662	4.561 ± 4.026	5.825 ± 5.175
METABOLIC	JAPONICA	6.156 ± 5.831	3.176 ± 3.100	4.732 ± 4.261	4.154 ± 3.720	4.852 ± 4.451
METABOLIC	UKB_WCSG	7.076 ± 6.754	2.781 ± 2.610	6.206 ± 5.368	2.864 ± 2.683	3.769 ± 3.478
METAB	CYTOSN	4.275 ±	2.483 ±	4.598 ±	3.130 ±	3.631 ±

OLIC	P	3.982	2.295	3.931	2.994	3.048
METAB OLIC	PMRA	5.870 ± 5.552	3.922 ± 3.594	6.502 ± 5.852	4.100 ± 3.678	5.202 ± 4.742
METAB OLIC	PMDA	5.357 ± 4.941	3.144 ± 2.918	6.226 ± 5.863	3.783 ± 3.667	4.843 ± 4.336
METAB OLIC	OMNI2.5	2.414 ± 2.358	1.663 ± 1.644	2.775 ± 2.612	1.881 ± 1.821	2.296 ± 2.058
METAB OLIC	OMNI5	1.879 ± 1.787	1.154 ± 1.114	2.005 ± 1.810	1.186 ± 1.139	1.649 ± 1.551
METAB OLIC	LPS_0.5	4.381 ± 4.196	3.217 ± 3.087	6.094 ± 5.391	3.942 ± 3.595	4.840 ± 4.280
METAB OLIC	LPS_0.75	3.980 ± 3.691	2.789 ± 2.616	5.015 ± 4.565	3.220 ± 2.909	4.062 ± 3.616
METAB OLIC	LPS_1.0	3.541 ± 3.345	2.437 ± 2.231	4.603 ± 4.077	3.020 ± 2.831	3.647 ± 3.162
METAB OLIC	LPS_1.25	3.187 ± 3.040	2.330 ± 2.222	4.130 ± 3.861	2.669 ± 2.534	3.489 ± 3.019
METAB OLIC	LPS_1.5	2.898 ± 2.856	2.246 ± 2.157	3.802 ± 3.565	2.665 ± 2.431	3.096 ± 2.805
METAB OLIC	LPS_2.0	2.564 ± 2.500	2.095 ± 1.911	3.257 ± 2.952	2.202 ± 2.014	2.866 ± 2.625

Table S. 22 Mean absolute difference of percentile ranking between PGSs estimated from imputed genotyping data of eight genotyping arrays and six LPS coverages and PGS estimated from WGS in 5 different populations with PRsice p-value setting of 1

Trait	Array/ LPS	AFR	AMR	EAS	EUR	SAS
BMI	GSA	7.680 ± 6.987	4.621 ± 3.999	7.455 ± 6.995	5.459 ± 4.807	6.070 ± 5.291
BMI	JAPONICA	6.778 ± 6.574	4.216 ± 3.847	4.780 ± 4.145	4.626 ± 4.221	4.796 ± 4.313
BMI	UKB_WCSG	7.424 ± 6.814	3.223 ± 2.839	6.005 ± 5.499	3.108 ± 2.960	4.287 ± 3.686
BMI	CYTOSNP	4.642 ± 4.570	2.998 ± 2.653	4.960 ± 3.964	3.839 ± 3.315	4.107 ± 3.566
BMI	PMRA	6.681 ± 6.432	3.981 ± 3.372	6.369 ± 6.270	4.905 ± 4.575	5.586 ± 4.901
BMI	PMDA	6.249 ± 5.923	3.793 ± 3.259	6.290 ± 5.728	4.410 ± 4.161	5.119 ± 4.275
BMI	OMNI2.5	2.494 ± 2.414	1.916 ± 1.620	2.945 ± 2.554	2.148 ± 2.063	2.457 ± 2.119
BMI	OMNI5	2.125 ± 1.998	1.361 ± 1.260	2.133 ± 1.898	1.360 ± 1.371	1.673 ± 1.482
BMI	LPS_0.5	5.090 ± 4.938	3.899 ± 3.350	6.190 ± 5.476	4.605 ± 4.251	5.016 ± 4.404
BMI	LPS_0.75	4.262 ± 4.181	3.547 ± 3.106	5.680 ± 5.068	3.786 ± 3.322	4.238 ± 3.727
BMI	LPS_1.0	3.920 ± 3.637	2.855 ± 2.576	4.829 ± 4.183	3.416 ± 3.096	3.687 ± 3.340
BMI	LPS_1.25	3.613 ± 3.498	2.790 ± 2.477	4.293 ± 3.825	3.156 ± 3.104	3.350 ± 3.079
BMI	LPS_1.5	3.305 ± 3.225	2.536 ± 2.214	3.871 ± 3.498	2.785 ± 2.541	3.303 ± 3.019
BMI	LPS_2.0	2.996 ± 2.757	2.404 ± 2.115	3.596 ± 2.968	2.545 ± 2.166	2.911 ± 2.506
DIABETES	GSA	7.397 ± 6.849	4.111 ± 3.654	7.841 ± 7.319	4.528 ± 4.122	5.634 ± 4.951
DIABETES	JAPONICA	6.614 ± 6.274	3.741 ± 3.444	4.811 ± 4.371	4.083 ± 3.897	4.892 ± 4.315
DIABETES	UKB_WCSG	7.208 ± 6.785	3.246 ± 2.997	6.603 ± 5.897	3.073 ± 2.841	4.527 ± 4.262
DIABETES	CYTOSNP	4.716 ± 4.501	2.568 ± 2.380	4.670 ± 4.130	2.746 ± 2.425	3.740 ± 3.467
DIABETES	PMRA	6.456 ± 5.851	3.922 ± 3.765	6.765 ± 5.830	4.130 ± 3.660	5.565 ± 4.967
DIABETES	PMDA	5.923 ± 5.657	3.634 ± 3.138	6.602 ± 5.851	3.657 ± 3.222	4.790 ± 4.573
DIABETES	OMNI2.5	2.627 ± 2.404	1.664 ± 1.519	3.058 ± 2.707	1.749 ± 1.665	2.348 ± 2.211

DIABETES	OMNI5	2.232 ± 2.125	1.242 ± 1.247	2.458 ± 2.231	1.271 ± 1.198	2.001 ± 1.924
DIABETES	LPS_0.5	4.653 ± 4.321	3.563 ± 3.110	6.102 ± 5.390	3.728 ± 3.523	4.411 ± 4.214
DIABETES	LPS_0.75	3.979 ± 3.944	3.144 ± 2.996	5.010 ± 4.443	3.180 ± 2.878	4.198 ± 3.799
DIABETES	LPS_1.0	3.620 ± 3.286	2.555 ± 2.337	4.500 ± 4.262	2.867 ± 2.716	3.424 ± 3.097
DIABETES	LPS_1.25	3.380 ± 3.375	2.548 ± 2.298	3.941 ± 3.491	2.566 ± 2.271	3.091 ± 2.752
DIABETES	LPS_1.5	3.340 ± 3.039	2.159 ± 2.015	3.938 ± 3.513	2.436 ± 2.305	3.241 ± 2.953
DIABETES	LPS_2.0	2.795 ± 2.752	2.103 ± 1.965	3.635 ± 3.194	2.271 ± 2.091	2.780 ± 2.649
HEIGHT	GSA	7.835 ± 7.004	4.150 ± 3.749	6.026 ± 5.136	3.576 ± 3.262	5.795 ± 5.238
HEIGHT	JAPONICA	6.258 ± 5.640	3.702 ± 3.443	4.239 ± 3.591	3.153 ± 2.783	4.540 ± 4.520
HEIGHT	UKB_WCSG	6.751 ± 6.042	2.981 ± 2.588	5.009 ± 4.405	2.085 ± 1.950	3.980 ± 3.625
HEIGHT	CYTOSNP	4.465 ± 4.227	3.074 ± 2.885	3.750 ± 3.235	2.350 ± 2.239	3.599 ± 3.344
HEIGHT	PMRA	6.318 ± 6.108	3.961 ± 3.592	5.189 ± 4.266	3.102 ± 2.842	4.775 ± 4.639
HEIGHT	PMDA	5.655 ± 5.023	3.466 ± 3.366	5.582 ± 4.963	2.775 ± 2.583	4.537 ± 4.457
HEIGHT	OMNI2.5	2.484 ± 2.262	1.948 ± 1.797	2.390 ± 1.982	1.424 ± 1.299	2.349 ± 2.157
HEIGHT	OMNI5	2.043 ± 1.888	1.200 ± 1.152	1.871 ± 1.695	0.953 ± 0.910	1.524 ± 1.398
HEIGHT	LPS_0.5	4.870 ± 4.477	3.288 ± 2.987	5.263 ± 4.980	2.984 ± 2.773	4.739 ± 4.392
HEIGHT	LPS_0.75	4.304 ± 3.922	3.219 ± 2.927	4.455 ± 4.094	2.823 ± 2.478	4.002 ± 3.791
HEIGHT	LPS_1.0	3.856 ± 3.526	2.848 ± 2.495	4.326 ± 3.771	2.332 ± 2.152	3.619 ± 3.375
HEIGHT	LPS_1.25	3.582 ± 3.210	2.751 ± 2.621	3.828 ± 3.258	2.217 ± 2.064	3.313 ± 3.207
HEIGHT	LPS_1.5	3.438 ± 3.302	2.434 ± 2.174	3.486 ± 3.064	1.965 ± 1.752	3.176 ± 2.935
HEIGHT	LPS_2.0	3.066 ± 2.689	2.251 ± 2.131	3.325 ± 2.973	1.948 ± 1.741	2.901 ± 2.667
METABOLIC	GSA	7.273 ± 6.589	3.927 ± 3.311	7.379 ± 6.677	4.554 ± 4.032	5.718 ± 5.135
METABOLIC	JAPONICA	6.095 ± 5.734	3.247 ± 3.086	4.748 ± 4.219	4.236 ± 3.754	4.869 ± 4.409
METABOLIC	UKB_WCSG	7.105 ± 6.747	2.696 ± 2.534	6.221 ± 5.326	2.854 ± 2.756	3.749 ± 3.395
METAB	CYTOSN	4.274 ±	2.460 ±	4.532 ±	3.160 ±	3.608 ±

OLIC	P	4.000	2.170	3.921	3.063	3.071
METAB OLIC	PMRA	5.841 ± 5.444	3.827 ± 3.471	6.593 ± 5.876	4.177 ± 3.682	5.157 ± 4.712
METAB OLIC	PMDA	5.293 ± 4.887	3.133 ± 2.828	6.244 ± 5.897	3.870 ± 3.699	4.874 ± 4.295
METAB OLIC	OMNI2.5	2.427 ± 2.329	1.711 ± 1.636	2.772 ± 2.554	1.953 ± 1.819	2.305 ± 2.083
METAB OLIC	OMNI5	1.854 ± 1.701	1.126 ± 1.062	1.976 ± 1.756	1.228 ± 1.192	1.628 ± 1.544
METAB OLIC	LPS_0.5	4.362 ± 4.157	3.206 ± 3.026	6.170 ± 5.316	4.001 ± 3.632	4.810 ± 4.345
METAB OLIC	LPS_0.75	3.987 ± 3.644	2.771 ± 2.524	5.104 ± 4.636	3.206 ± 2.896	4.060 ± 3.628
METAB OLIC	LPS_1.0	3.551 ± 3.261	2.462 ± 2.258	4.541 ± 4.140	3.024 ± 2.844	3.634 ± 3.170
METAB OLIC	LPS_1.25	3.180 ± 3.012	2.211 ± 2.155	4.165 ± 3.938	2.632 ± 2.566	3.417 ± 2.890
METAB OLIC	LPS_1.5	2.805 ± 2.722	2.242 ± 2.019	3.884 ± 3.560	2.676 ± 2.455	3.056 ± 2.717
METAB OLIC	LPS_2.0	2.578 ± 2.464	2.061 ± 1.836	3.252 ± 2.990	2.226 ± 1.990	2.790 ± 2.540