Table 1: Simulation results for significant SNPs associated with BMI trajectories in females.

	rs4451518			rs13124340		
Parameter	True value	Estimate	MCSE	True Value	Estimate	MCSE
b_{20}	26.18	26.1884	0.0990	29.19	29.2749	0.0245
b_{21}	-1.6000	-1.5367	0.0899	1.1700	1.2103	0.0654
b_{22}	3.5200	3.5410	0.0183	-8.7900	-8.7582	0.0090
c_{21}	0.0028	0.0035	0.0798	0.0199	0.0205	0.0657
c_{22}	-0.1034	-0.1026	0.0646	0.0940	0.0942	0.0114
c_{23}	0.0056	0.0059	0.0024	0.0270	0.0271	0.0215
c_{24}	0.0219	0.0225	0.0598	0.0590	0.0599	0.0298
c_{25}	-0.0519	-0.0510	0.0255	0.0032	0.0035	0.0095
c_{26}	0.0085	0.0093	0.0658	-0.0194	-0.0190	0.0143
b_{10}	24.7900	24.8613	0.0260	25.6100	25.6233	0.0606
b_{11}	-2.3000	-2.2445	0.0785	-3.4700	-3.4575	0.0691
b_{12}	-5.2700	-5.1740	0.0514	3.5200	3.5759	0.0771
c_{11}	0.0140	0.0147	0.0581	0.0710	0.0713	0.0174
c_{12}	-0.0024	-0.0017	0.0821	0.0501	0.0507	0.0870
c_{13}	0.0081	0.0081	0.0230	0.0061	0.0063	0.0085
c_{14}	-0.0237	-0.0237	0.0055	-0.0005	-0.0005	0.0926
c_{15}	-0.0012	-0.0003	0.0103	0.0410	0.0415	0.0015
c_{16}	0.0619	0.0628	0.0523	0.1030	0.1032	0.0574
b_{00}	24.0300	24.1134	0.0789	24.2700	24.3057	0.0903
b_{01}	0.9800	0.9918	0.0674	3.6100	3.6799	0.0921
b_{02}	2.8100	2.8149	0.0383	-1.7500	-1.7479	0.0110
c_{01}	0.0061	0.0069	0.0386	0.0520	0.0527	0.0565
c_{02}	0.0008	0.0010	0.0356	0.1140	0.1140	0.0875
c_{03}	-0.0183	-0.0176	0.0321	-0.0823	-0.0818	0.0087
c_{04}	-0.0391	-0.0387	0.0866	0.0691	0.0692	0.0606
c_{05}	0.0028	0.0034	0.0319	-0.0072	-0.0066	0.0568
c_{06}	-0.0005	-0.0004	0.0443	0.0048	0.0056	0.0697
λ_0	0.6800	0.6894	0.0542	1.5400	1.5438	0.0650
λ_1	2.5700	2.5768	0.0803	0.0291	0.0370	0.0851
λ_2	-1.9200	-1.9111	0.024	-1.3200	-1.3103	0.07215
δ_0	2.7300	2.7385	0.0106	1.7100	1.7155	0.0505
δ_1	-1.4500	-1.4427	0.0481	-0.0193	-0.0151	0.0612
δ_2	0.2060	0.2075	0.0640	2.3010	2.3067	0.0601
q	0.7900	0.7909	0.0722	0.8560	0.8608	0.0929
D	0.1305	0.1371	0.0872	0.1006	0.1062	0.0486

Table 2: Simulation results for significant SNPs associated with BMI trajectories in males.

	rs17782554			rs11783045			rs9915696		
Parameter	True value	Estimate	MCSE	True Value	Estimate	MCSE	True Value	Estimate	MCSE
b_{20}	25.29	25.3275	0.0697	25.9	25.9471	0.0282	28.93	29.0274	0.0781
b_{21}	4.3500	4.3960	0.0978	7.2700	7.3013	0.0482	7.9200	7.9820	0.0472
b_{22}	0.5300	0.5838	0.0361	8.7900	8.8782	0.0221	5.2700	5.3621	0.0532
c_{21}	0.0437	0.0443	0.0057	0.0745	0.0751	0.0347	0.0293	0.0295	0.0709
c_{22}	0.0889	0.0889	0.0362	0.0035	0.0040	0.0059	0.0105	0.0115	0.0464
c_{23}	0.0858	0.0866	0.0539	0.0315	0.0324	0.0563	0.0469	0.0476	0.0964
c_{24}	0.0336	0.0337	0.0120	0.0444	0.0447	0.0195	0.0673	0.0673	0.0791
c_{25}	0.0886	0.0896	0.0636	0.0829	0.0836	0.0987	0.1084	0.1085	0.0783
c_{26}	0.0801	0.0804	0.0014	0.0019	0.0024	0.0448	0.0688	0.0693	0.0164
b_{10}	25.4400	25.5160	0.090	27.0300	27.0827	0.0925	24.2800	24.3061	0.0727
b_{11}	-2.1200	-2.0408	0.073	7.5300	7.5748	0.0733	3.3187	3.4076	0.0088
b_{12}	1.8900	1.9685	0.0923	5.1000	5.1377	0.0314	-0.7031	-0.7025	0.0268
c_{11}	0.0031	0.0038	0.0113	0.0092	0.0098	0.0245	0.0638	0.0643	0.0978
c_{12}	0.1051	0.1058	0.0777	0.1041	0.1050	0.0547	0.1407	0.1415	0.0757
c_{13}	0.1072	0.1082	0.0379	0.1312	0.1313	0.0479	0.0494	0.0500	0.0770
c_{14}	0.0464	0.0470	0.0809	0.1418	0.1427	0.0507	0.0856	0.0859	0.0437
c_{15}	0.0537	0.0540	0.0251	0.0894	0.0900	0.0420	0.1247	0.1247	0.0025
c_{16}	0.0042	0.0046	0.0289	0.0847	0.0848	0.0377	0.1299	0.1306	0.0607
b_{00}	25.6800	25.7737	0.012	25.5600	25.5894	0.006	27.3900	27.4817	0.0183
b_{01}	-3.5500	-3.4656	0.045	-2.3100	-2.2828	0.010	-5.7656	-5.6844	0.0077
b_{02}	2.4600	2.5228	0.0658	-0.7000	-0.6802	0.082	-1.7578	-1.7501	0.0737
c_{01}	-0.0113	-0.0104	0.084	-0.0671	-0.0669	0.089	-0.0733	-0.0723	0.0105
c_{02}	-0.0750	-0.0741	0.084	-0.0038	-0.0036	0.007	-0.0787	-0.0779	0.0786
c_{03}	-0.0306	-0.0304	0.017	-0.0790	-0.0786	0.036	-0.0788	-0.0778	0.0718
c_{04}	-0.0033	-0.0023	0.042	-0.0274	-0.0271	0.050	-0.0604	-0.0601	0.0623
c_{05}	-0.0851	-0.0848	0.062	-0.0317	-0.0309	0.020	-0.0765	-0.0756	0.0838
c_{06}	-0.0035	-0.0025	0.011	-0.0473	-0.0470	0.047	-0.0808	-0.0798	0.0581
λ_0	-0.3810	-0.3737	0.0532	1.4010	1.4084	0.0217	1.6901	1.6921	0.0852
λ_1	1.4020	1.4094	0.0289	-0.0360	-0.0298	0.0387	-0.0072	-0.0021	0.0015
λ_2	0.0052	0.0130	0.0975	1.0402	1.0432	0.0855	0.0791	0.0876	0.0457
δ_0	-1.3900	-1.3861	0.0561	-2.5030	-2.4999	0.0601	1.4300	1.4358	0.0122
δ_1	0.9520	0.9580	0.0524	0.0072	0.0110	0.0736	-0.0184	-0.0109	0.0246
δ_2	2.1090	2.1187	0.0461	-1.0030	-0.9981	0.0952	0.0098	0.0149	0.0134
q	0.5893	0.5956	0.0295	0.6082	0.6128	0.0511	0.7258	0.7326	0.0543
D	0.1532	0.1590	0.0239	0.1640	0.1728	0.0888	0.1528	0.1533	0.0395

Table 3: Simulation results for significant SNPs associated with BMI trajectories in both males and females.

	rs3903759(male)			rs3903759(female)		
Parameter	True value	Estimate	MCSE	True Value	Estimate	MCSE
b_{20}	28.73	28.7890	0.0446	29.03	29.0304	0.0942
b_{21}	-3.6100	-3.5111	0.0432	3.8900	3.9028	0.0268
b_{22}	1.7460	1.8304	0.0424	1.7600	1.7658	0.0918
c_{21}	0.0028	0.0037	0.0046	-0.0064	-0.0055	0.0096
c_{22}	0.0033	0.0036	0.0857	0.0381	0.0388	0.0173
c_{23}	0.0099	0.0102	0.0917	0.0617	0.0626	0.0891
c_{24}	0.0084	0.0093	0.0234	0.0419	0.0428	0.0620
c_{25}	0.0064	0.0067	0.0741	-0.0081	-0.0076	0.0366
c_{26}	0.0030	0.0032	0.0048	0.0271	0.0281	0.0536
b_{10}	25.1500	25.2444	0.0952	25.9400	26.0306	0.0630
b_{11}	-0.8700	-0.8627	0.0240	-1.3100	-1.2251	0.0162
b_{12}	1.8900	1.9179	0.0730	7.0300	7.0695	0.0270
c_{11}	0.0024	0.0029	0.0495	0.0012	0.0014	0.0007
c_{12}	0.0951	0.0956	0.0994	0.0629	0.0630	0.0376
c_{13}	0.0247	0.0253	0.0488	-0.0075	-0.0066	0.0459
c_{14}	0.0573	0.0573	0.0175	0.1840	0.1840	0.0871
c_{15}	0.0110	0.0120	0.0549	0.0638	0.0647	0.0487
c_{16}	0.0522	0.0529	0.0305	0.1304	0.1311	0.0905
b_{00}	25.6000	25.6829	0.0283	25.7000	25.7456	0.0613
b_{01}	0.6000	0.6255	0.0338	1.7300	1.7795	0.0200
b_{02}	-4.3900	-4.3182	0.0687	-1.7600	-1.6687	0.0991
c_{01}	-0.1224	-0.1215	0.0644	-0.0008	-0.0006	0.0549
c_{02}	-0.0174	-0.0171	0.0529	0.0381	0.0388	0.0217
c_{03}	-0.1006	-0.0997	0.0886	0.1704	0.1710	0.0557
c_{04}	-0.0370	-0.0363	0.0629	0.0800	0.0801	0.0820
c_{05}	-0.1279	-0.1273	0.0623	0.0714	0.0722	0.0803
c_{06}	-0.1401	-0.1395	0.0307	0.0529	0.0536	0.0756
λ_0	1.9300	1.9381	0.0350	-1.4200	-1.4169	0.0572
λ_1	0.1860	0.1945	0.0821	0.0064	0.0118	0.0008
λ_2	0.0083	0.0104	0.0259	2.8210	2.8299	0.0804
δ_0	1.6300	1.6373	0.0745	1.5200	1.5294	0.0944
δ_1	-0.0826	-0.0745	0.0869	-0.0491	-0.0442	0.0181
δ_2	1.0402	1.0446	0.0021	1.8490	1.8559	0.0054
q	0.8261	0.8302	0.0158	0.8150	0.8218	0.0519
D	0.1083	0.1161	0.0781	0.1108	0.1194	0.0913