Table 2: The results of 3-level nested ANOVA

			Male (M)			Female (F)			Harris-Boyd method *1			Nested ANOVA *2		
Analytes	Units	Trans	n	mean	SD	n	mean	SD	z	k	az=k×z	SDR-sex	SDR-reg (M, F)	SDR-age (M, F)
TP	g/L		1437	71.4	3.9	1871	71.4	4.1	0.22	0.269	0.1	0.00	0.36 (0.31, 0.39)	0.23 (0.22, 0.23)
CysC	μg/L		1424	0.94	0.13	1846	0.81	0.12	27.55	0.271	7.5	0.72	0.28 (0.33, 0.20)	0.33 (0.28, 0.37)
IP	mmol/L		1437	1.18	0.16	1871	1.26	0.15	14.31	0.269	3.9	0.36	0.00 (0.00, 0.00)	0.34 (0.35, 0.32)
Fe	μmol/L		1437	19.1	6.9	1871	15.9	7.2	12.83	0.269	3.5	0.31	0.06 (0.00, 0.07)	0.03 (0.00, 0.06)
UIBC	μmol/L		1437	37.1	9.8	1871	45.1	12.7	20.41	0.269	5.5	0.49	0.14 (0.21, 0.07)	0.16 (0.02, 0.20)
ApoA1	mg/L		1436	1404	205	1866	1544	225	18.59	0.270	5.0	0.40	0.45 (0.55, 0.41)	0.20 (0.17, 0.13)
ApoB	mg/L		1436	931	215	1868	849	202	11.26	0.270	3.0	0.26	0.00 (0.00, 0.00)	0.58 (0.51, 0.63)
ApoE	mg/L	log	1436	41.1	10.5	1871	43.7	11.4	6.96	0.269	1.9	0.16	0.07 (0.08, 0.06)	0.20 (0.21, 0.19)
LP(a)	mg/L	log	1436	152	169	1871	166	170	2.36	0.269	0.6	0.05	0.10 (0.14, 0.11)	0.11 (0.11, 0.14)
LIP	U/L	log	1437	25.4	7.6	1871	26.2	7.6	3.30	0.269	0.9	0.00	0.11 (0.08, 0.15)	0.24 (0.31, 0.11)
IgE	$\times 10^3$IU/L		1436	204	397	1868	158	339	3.53	0.270	1.0	0.13	0.21 (0.17, 0.14)	0.19 (0.15, 0.12)
SAA	mg/L	log	1424	7.2	16.2	1850	6.9	17.0	0.59	0.271	0.2	0.00	0.31 (0.27, 0.34)	0.04 (0.00, 0.04)
RBP	mg/L		1436	34.3	7.5	1871	26.0	6.2	33.86	0.269	9.1	0.94	0.16 (0.25, 0.00)	0.49 (0.47, 0.50)
ASO	IU/mL		1435	66.7	85.8	1870	61.6	75.5	1.78	0.269	0.5	0.00	0.30 (0.25, 0.33)	0.23 (0.28, 0.17)
sTf-R	nmol/L	log	1436	15.7	4.4	1869	17.2	6.9	7.40	0.269	2.0	0.08	0.20 (0.32, 0.11)	0.11 (0.06, 0.11)
Ferritin	μg/L	log	1436	135	97	1869	37	39	36.37	0.269	9.8	1.38	0.29 (0.44, 0.21)	0.38 (0.17, 0.44)
EPO	IU/L	log	1436	8.4	3.8	1869	11.1	8.6	12.07	0.269	3.3	0.27	0.13 (0.07, 0.15)	0.15 (0.17, 0.15)
VitB12	ng/L	log	1436	165	60	1868	191	69	11.29	0.270	3.0	0.26	0.18 (0.20, 0.17)	0.21 (0.18, 0.23)
Folate	μg/L	log	1434	15.0	7.1	1867	19.3	9.8	14.63	0.270	3.9	0.08	0.68 (0.71, 0.66)	0.26 (0.24, 0.27)
AFP	μg/L	log	1436	3.06	1.70	1869	2.88	1.69	3.09	0.269	0.8	0.00	0.00 (0.00, 0.09)	0.43 (0.41, 0.44)
CEA	μg/L	log	1436	1.85	1.24	1869	1.42	2.95	5.63	0.269	1.5	0.32	0.10 (0.18, 0.00)	0.23 (0.18, 0.26)
CA19-9	$\times 10^3$IU/L	log	1436	7.2	7.6	1869	10.0	9.1	9.46	0.269	2.6	0.18	0.14 (0.21, 0.05)	0.05 (0.05, 0.00)
CA125	$\times 10^3$IU/L	log	1436	8.3	3.8	1869	16.1	19.7	16.92	0.269	4.6	0.65	0.00 (0.08, 0.00)	0.37 (0.09, 0.42)
CA15-3	$\times 10^3$IU/L	log	1436	8.1	3.6	1869	7.3	3.3	6.70	0.269	1.8	0.00	0.35 (0.38, 0.32)	0.09 (0.09, 0.07)
PSA	μg/L	log	1436	1.09	0.92	1869	0.01	0.08	44.40	0.269	12.0	17.29	0.24 (0.00, 0.08)	0.10 (0.08, 0.07)
PG1	μg/L	log	1424	50.2	19.6	1850	43.3	20.6	9.71	0.271	2.6	0.29	0.06 (0.12, 0.00)	0.36 (0.29, 0.36)
PG2	μg/L	log	1424	11.0	7.7	1850	10.5	9.2	1.67	0.271	0.5	0.00	0.00 (0.08, 0.00)	0.47 (0.42, 0.50)
DHEA-S	mmol/L		1436	2385	948	1869	1535	804	27.23	0.269	7.3	0.77	0.00 (0.00, 0.00)	0.66 (0.54, 0.80)
PRL	μg/L	log	1436	9.73	7.03	1869	14.00	10.23	14.21	0.269	3.8	0.43	0.04 (0.21, 0.00)	0.38 (0.21, 0.45)
LH	IU/L	log	1436	3.50	2.22	1869	13.30	15.03	27.81	0.269	7.5	0.76	0.00 (0.30, 0.00)	0.63 (0.16, 0.67)
FSH	IU/L	log	1436	6.35	5.30	1869	23.15	34.28	20.86	0.269	5.6	0.55	0.00 (0.00, 0.00)	1.28 (0.57, 1.48)
TSH	mU/L	log	1436	1.61	1.00	1868	1.72	1.05	3.17	0.270	0.9	0.00	0.16 (0.19, 0.15)	0.08 (0.05, 0.11)
FT4	pmol/L		1436	12.0	1.5	1869	11.5	1.4	9.99	0.269	2.7	0.23	0.14 (0.06, 0.19)	0.19 (0.21, 0.12)
FT3	pmol/L		1436	4.77	0.42	1869	4.47	0.41	20.79	0.269	5.6	0.52	0.00 (0.00, 0.08)	0.23 (0.29, 0.15)
Tg	μg/L	log	1436	11.0	10.7	1868	12.8	18.5	3.52	0.270	0.9	0.00	0.14 (0.14, 0.14)	0.06 (0.00, 0.04)
Insulin	mIU/L	log	1433	6.1	6.0	1867	5.4	4.3	3.83	0.270	1.0	0.00	0.24 (0.21, 0.28)	0.15 (0.00, 0.00)
Adiponectin	mg/L	log	1424	8.0	3.5	1850	12.1	5.2	27.08	0.271	7.3	0.65	0.36 (0.32, 0.38)	0.15 (0.00, 0.00)
PTH	ng/L	log	1436	47.2	18.6	1869	49.3	20.7	2.97	0.269	0.8	0.00	0.41 (0.35, 0.45)	0.24 (0.22, 0.22)
BoneALP	μg/L	log	1436	13.4	4.3	1869	11.2	3.7	14.89	0.269	4.0	0.41	0.00 (0.00, 0.00)	0.38 (0.19, 0.48)
TRAP-5b	U/L	log	1411	2.09	0.79	1831	1.81	0.85	9.65	0.272	2.6	0.23	0.30 (0.43, 0.17)	0.46 (0.11, 0.59)

Trans: transformation

SDR represents the ratio of the standard deviation for a given factor to that for a net between-individual variation.

SDR-sex, SDR-reg, and SDR-age denote SDR representing between-sex, between-region, and between-age differences, respectively.

*1 Harris-Boyd method was used to test for the need of partitioning by sex.

The z score representing differences in two means is adjusted to az by multiplying a coefficient (k), which depends on the sample sizes of the two groups

For partitioning of RI, az≥3.0 is usually considered as siginificant.

*2 Three-level nested ANOVA was applied in 2 stages, first for between-sex, -region, and -age differences, and second for between-region,

' −age, and −BMI after partitioning by sex.

SDR ≥0.3 was regarded as a significant between-sex, between-city, or between-age difference