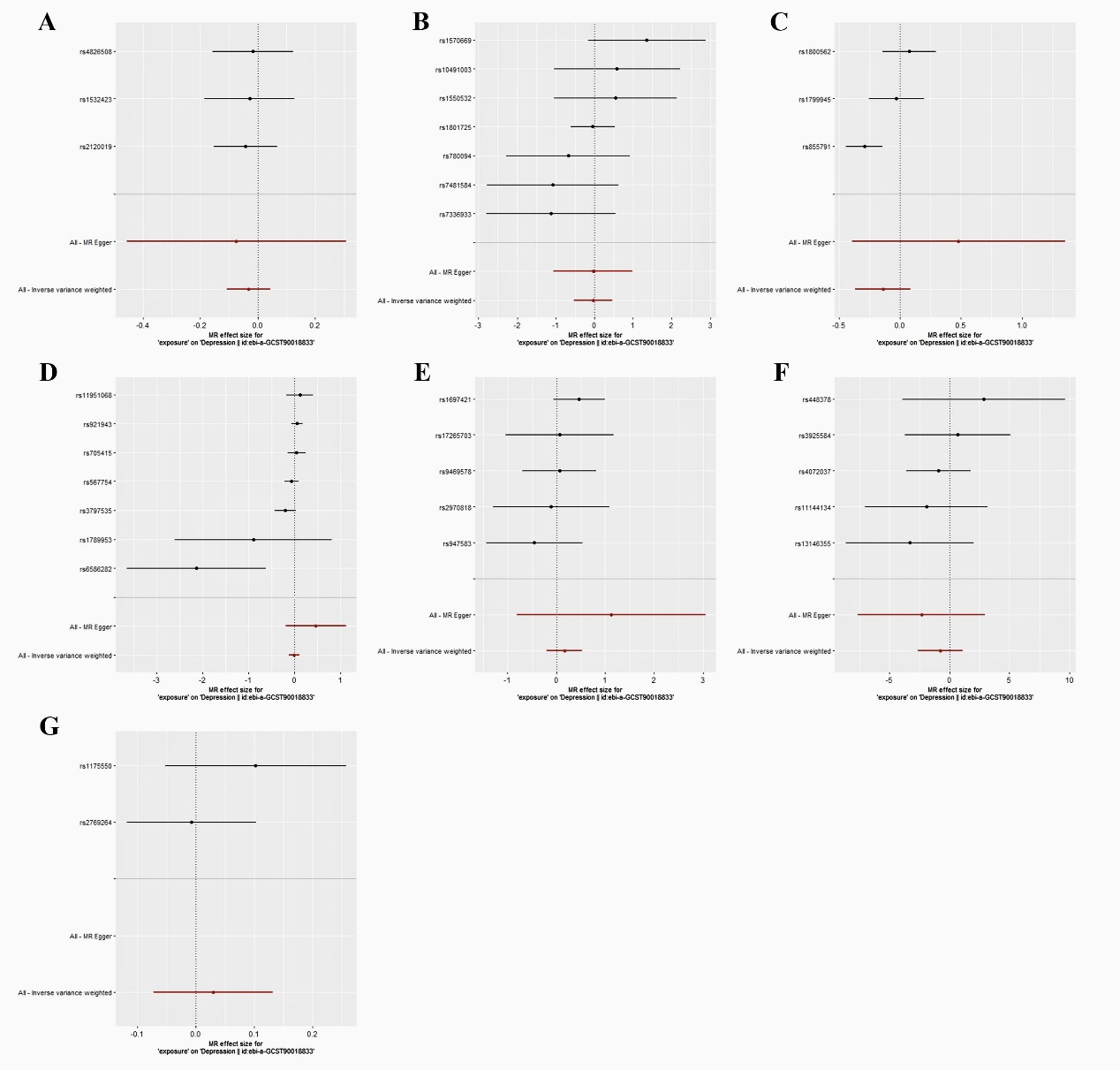
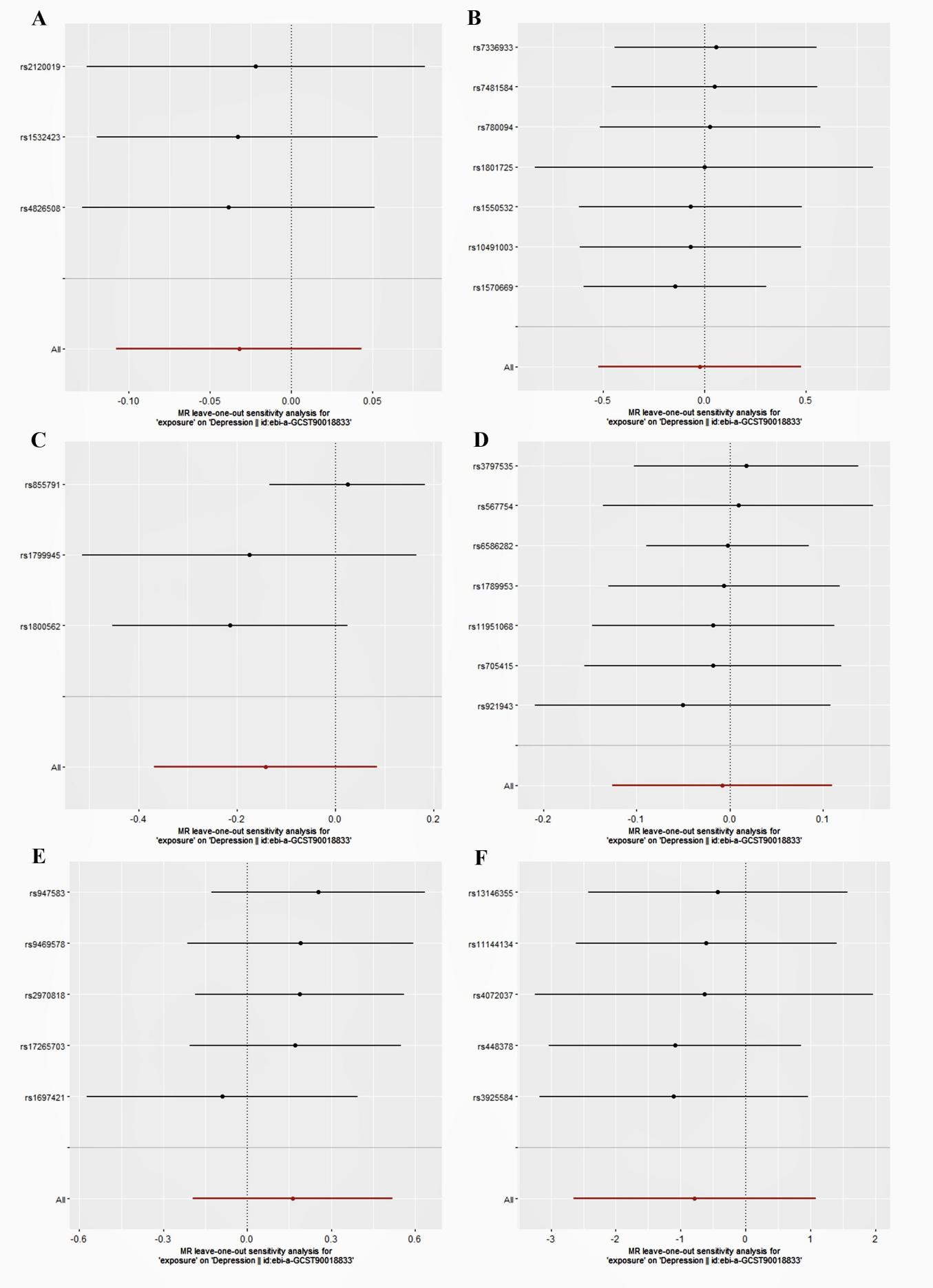


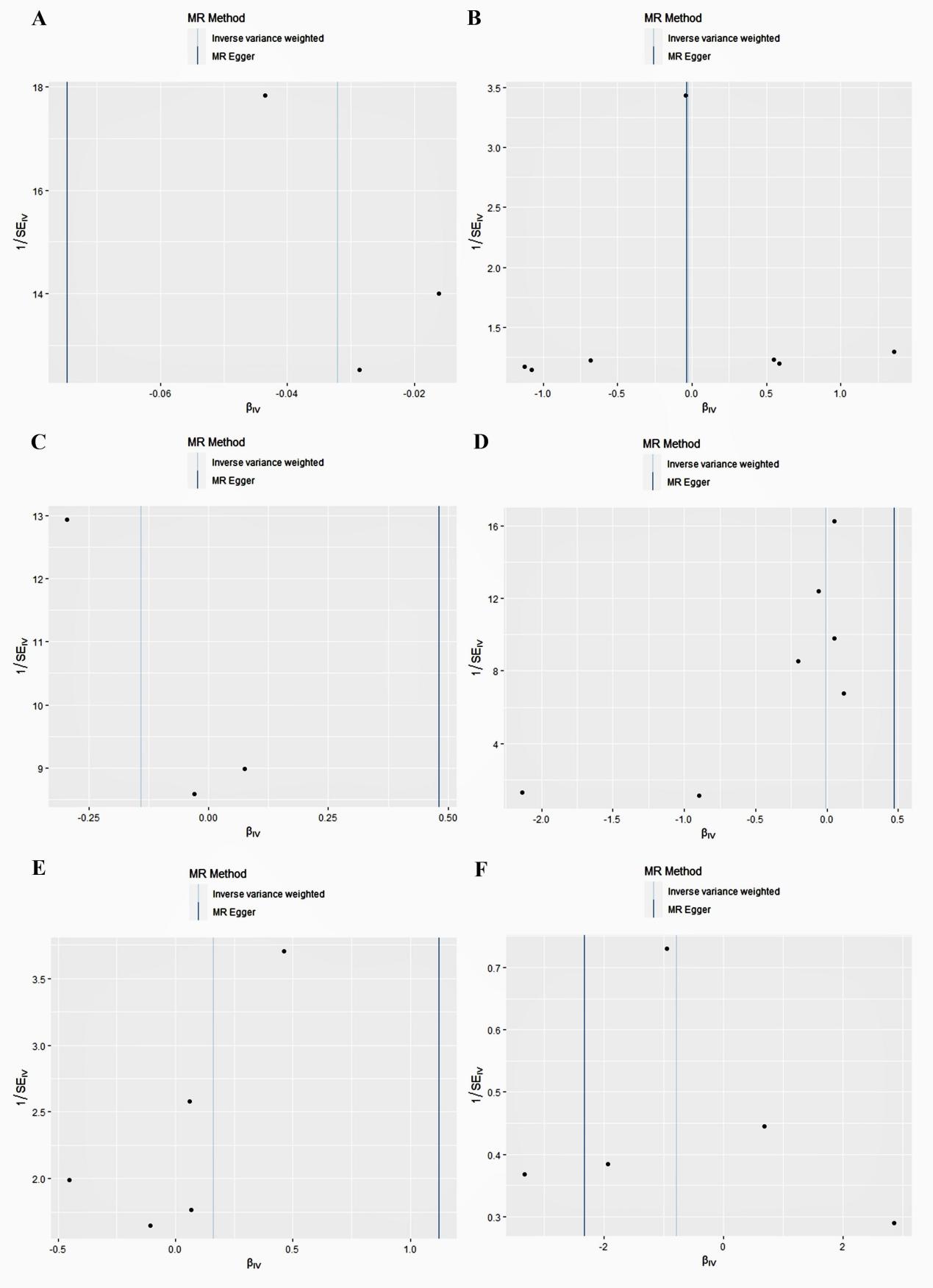
**Supplementary Fig. 1. Scatterplot of the effect size of each SNP on serum mineral levels and depression risk.** Associations of calcium (A), iron (B), magnesium (C), phosphorus (D), selenium (E), zinc (F), and copper (G) related variants with risk of depression. The slopes of the solid lines denote the magnitudes of the associations estimated from the MR analyses. The circles indicate the marginal genetic associations with the serum mineral levels and the risk of depression for each variant. Error bars indicate 95% CIs.



**Supplementary Fig. 2. IVW and MR Egger analysis of the causal association of serum mineral levels with depression risk.** Associations of zinc (A), calcium (B), iron (C), selenium (D), phosphorus (E), magnesium (F), and copper (G) related variants with depression risk. The black dots and bars indicate the casual estimate and 95% CI, respectively, using each SNP. The red dots and bars indicate the overall estimate and 95% CI, respectively, meta-analyzed by IVW and MR Egger methods.



**Supplementary Fig. 3. Leave-one-out analysis of the causal association of serum mineral levels with depression risk.** Leave-one-out analysis of the causal association of zinc (A), calcium (B), iron (C), selenium (D), phosphorus (E), and magnesium (F) related variants with depression risk. The black dots and bars indicate the causal estimate and 95% CI, respectively, when an SNP was removed in turn. The red dots and bars indicate the overall estimate and 95% CI, respectively, when fixed-effects IVW method was used.



**Supplementary Fig. 4. Funnel plot of the Mendelian randomization analysis for depression.** Funnel plot of the causal association of zinc (A), calcium (B), iron (C), selenium (D), phosphorus (E), and magnesium (F) related variants with depression risk. The funnel plot evaluated the presence of potential heterogeneity across the estimates, which indicates the potential pleiotropic effects. The figure presents the observed causal effect of each instrumental variable (IV) using dots. The x-axis displays the averaged causal effect of all IVs combined (βIV) using IVW and MR Egger method, while the y-axis presents the inverse standard error of the estimated causal effect for each single nucleotide polymorphism (SNP).