

**File name: Supplementary Data 1**

Description: Associations of metabolites with all-cause, cardiovascular, and cancer mortality in the fully adjusted model in NHS/NHSII/HPFS

**File name: Supplementary Data 2**

Description: Associations of metabolites or multi-metabolite profile score with all-cause, cardiovascular, and cancer mortality adjusting for incident CVD in NHS/NHSII/HPFS

**File name: Supplementary Data 3**

Description: Associations of metabolites or multi-metabolite profile score with all-cause, cardiovascular, and cancer mortality adjusting for incident cancer in NHS/NHSII/HPFS

**File name: Supplementary Data 4**

Description: Categories and module assignment of metabolites

**File name: Supplementary Data 5**

Description: Metabolites selected in the elastic net regression and their coefficients for all-cause mortality

**File name: Supplementary Data 6**

Description: Associations of metabolites with longevity in the fully adjusted model in NHS/NHSII/HPFS

**File name: Supplementary Data 7**

Description: Associations of metabolites with mortality and longevity in the fully adjusted model in PREDIMED