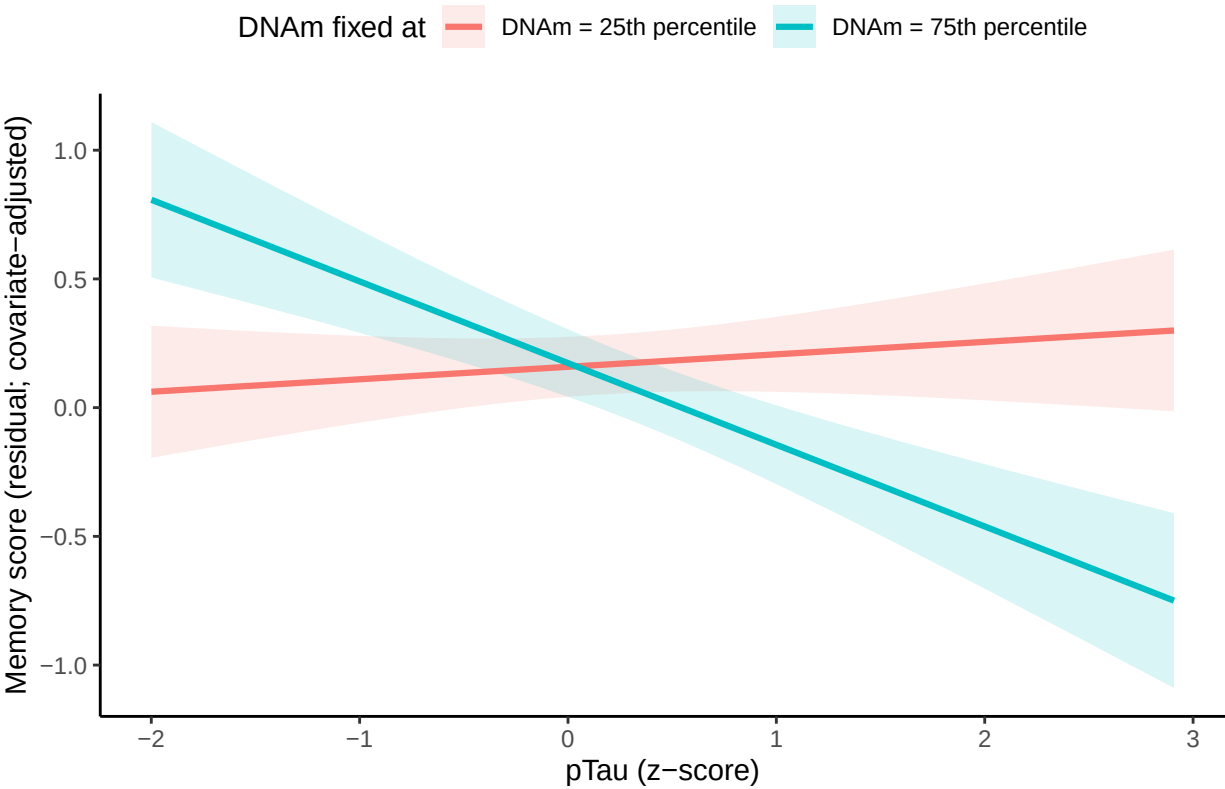


Supplementary Figure 1 Estimated association (with 95% CI) between pTau181 (z-score) and covariate-adjusted memory (residuals) from Model 1 evaluated at DNAm fixed to the 25th percentile and 75th percentile of methylation levels.

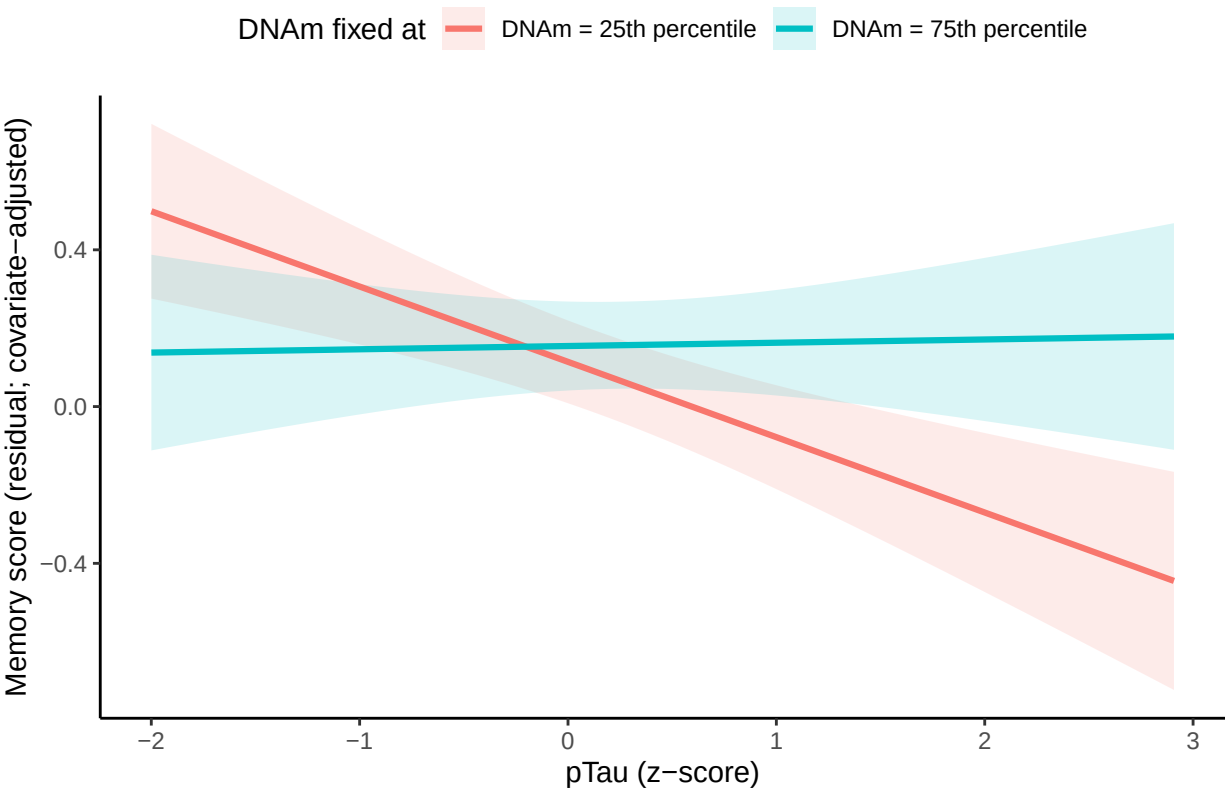
CpG cg01602139

DNAm fixed at 25th vs 75th percentile



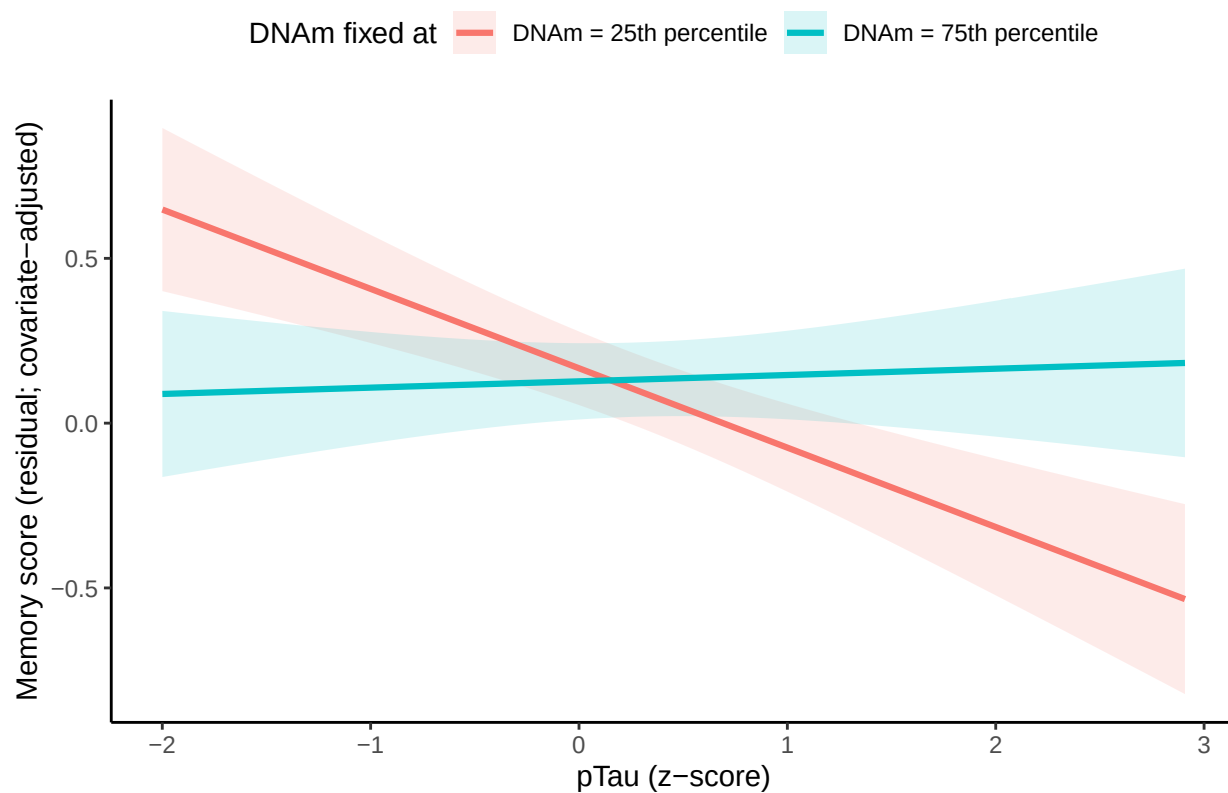
CpG cg03281038

DNAm fixed at 25th vs 75th percentile



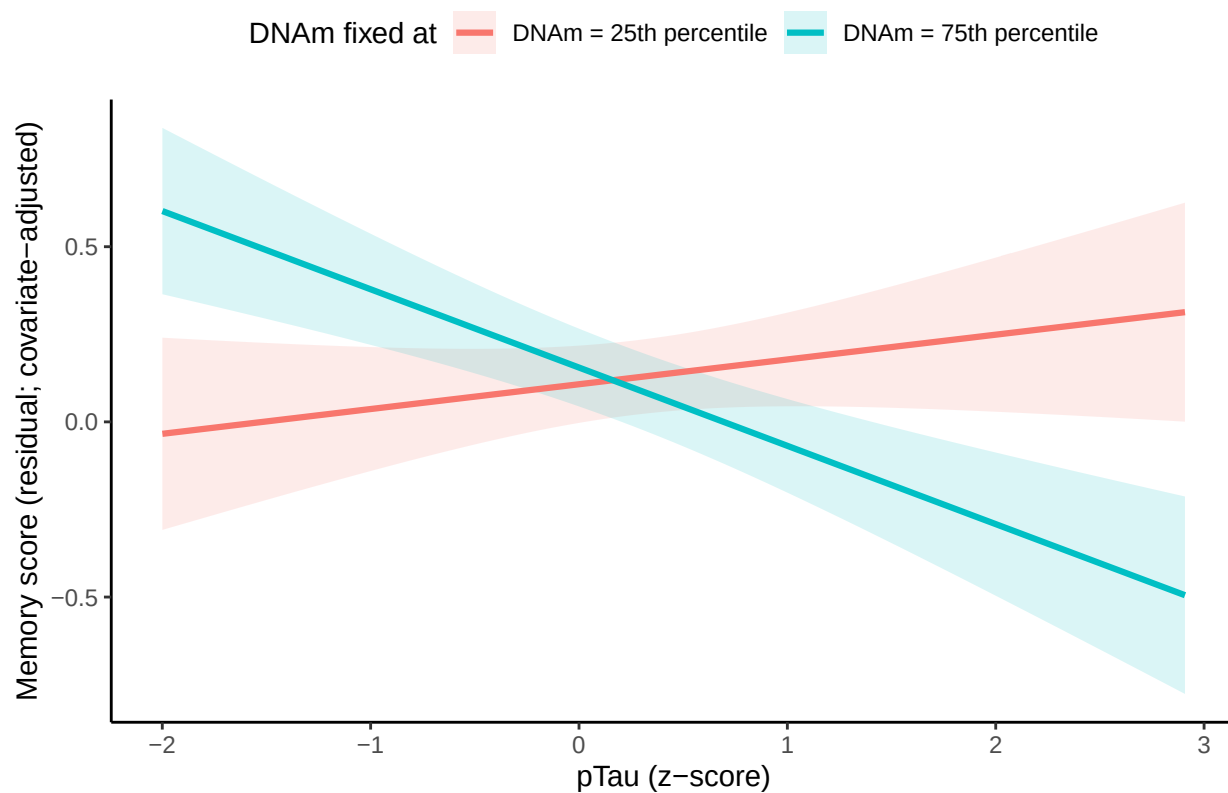
CpG cg08579041

DNAm fixed at 25th vs 75th percentile



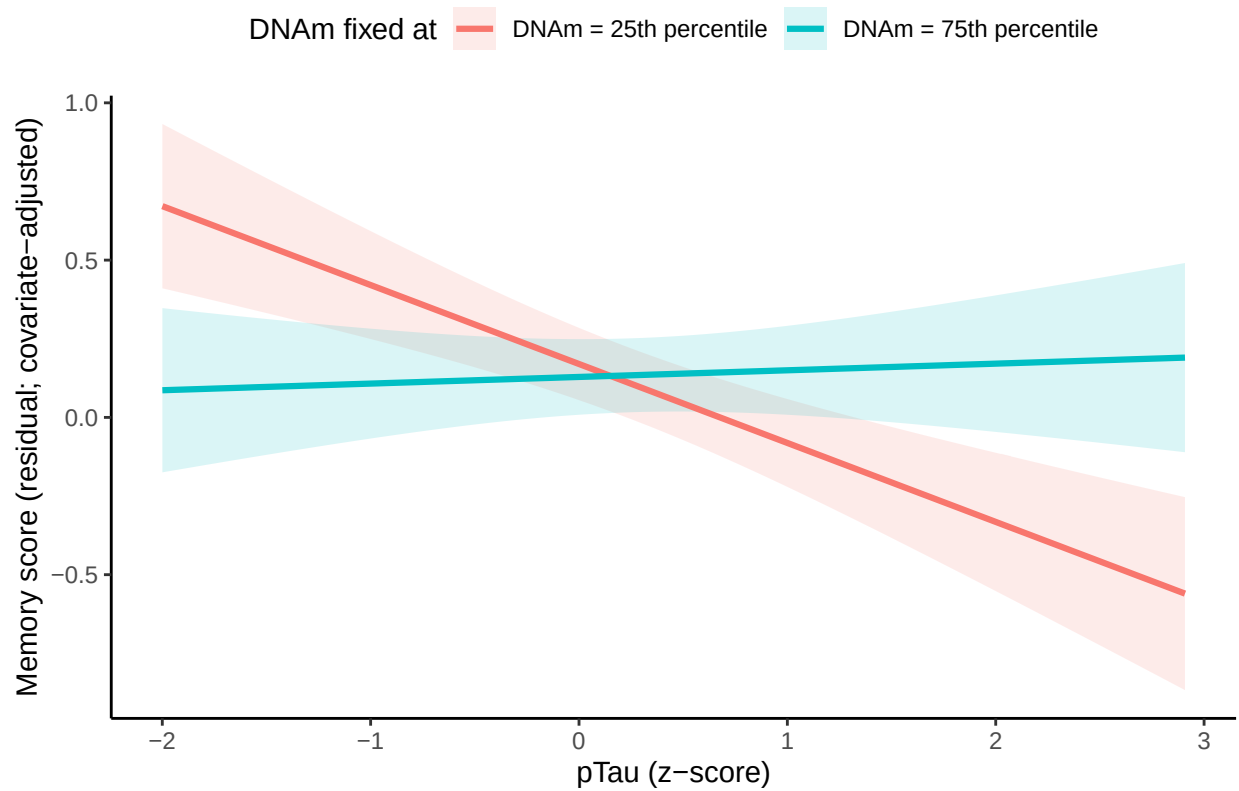
CpG cg11145222

DNAm fixed at 25th vs 75th percentile



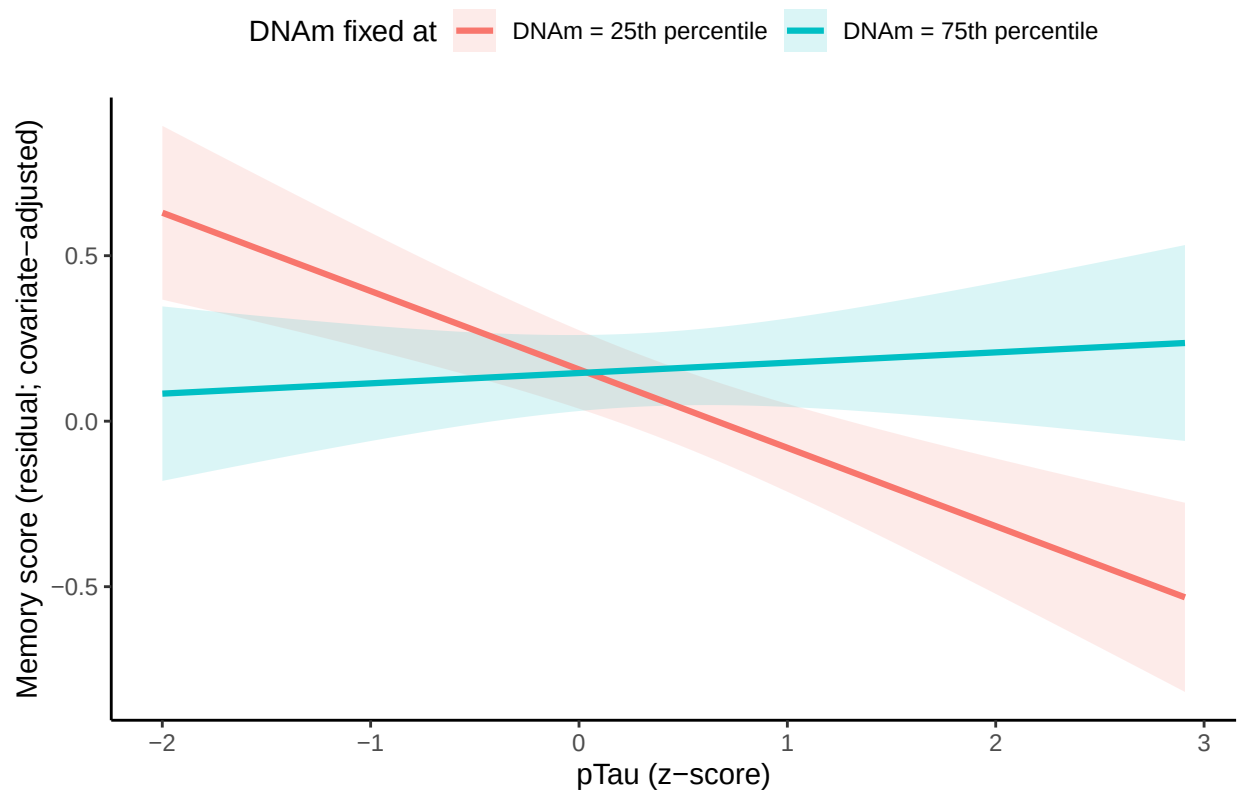
CpG cg24481207

DNAm fixed at 25th vs 75th percentile

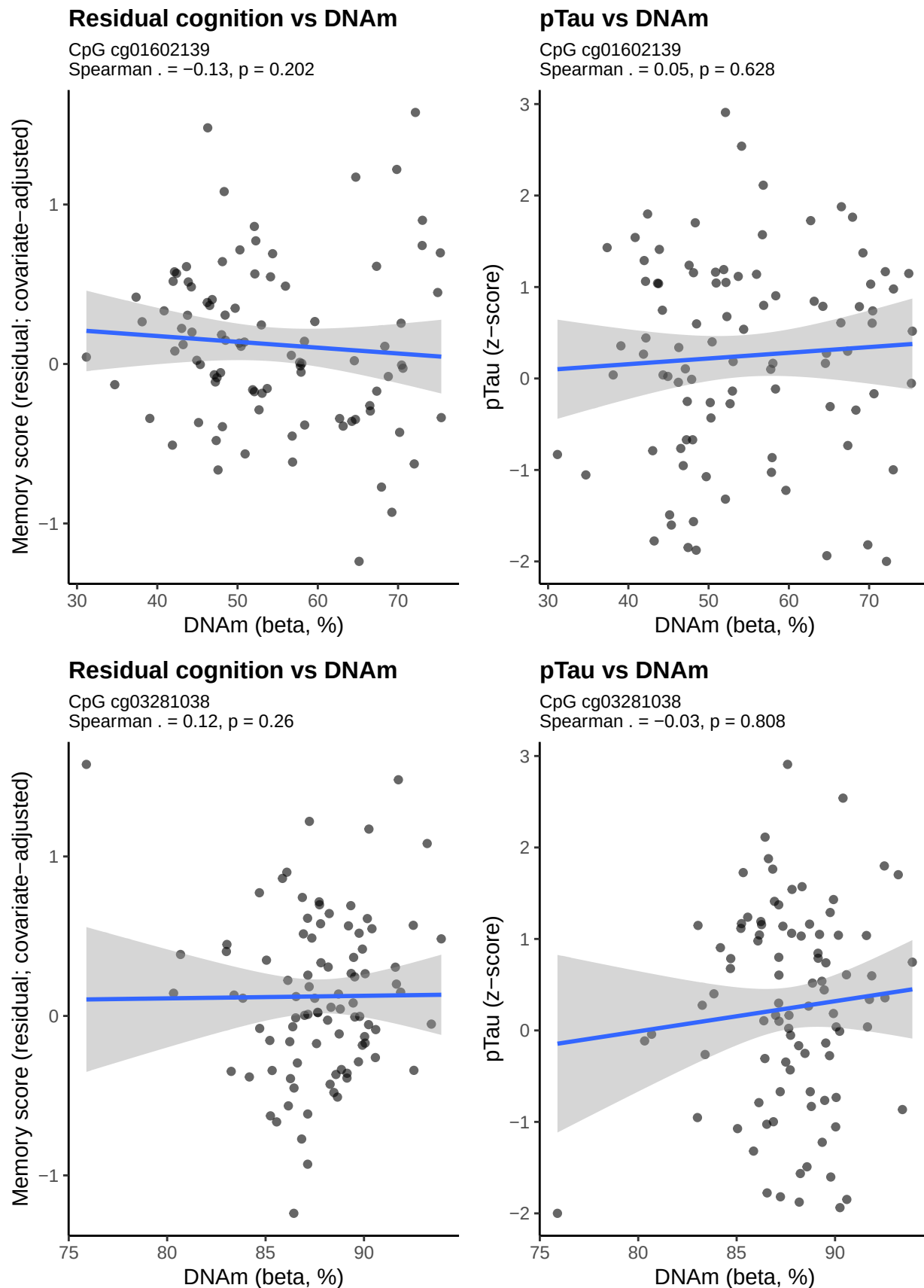


CpG cg26869675

DNAm fixed at 25th vs 75th percentile

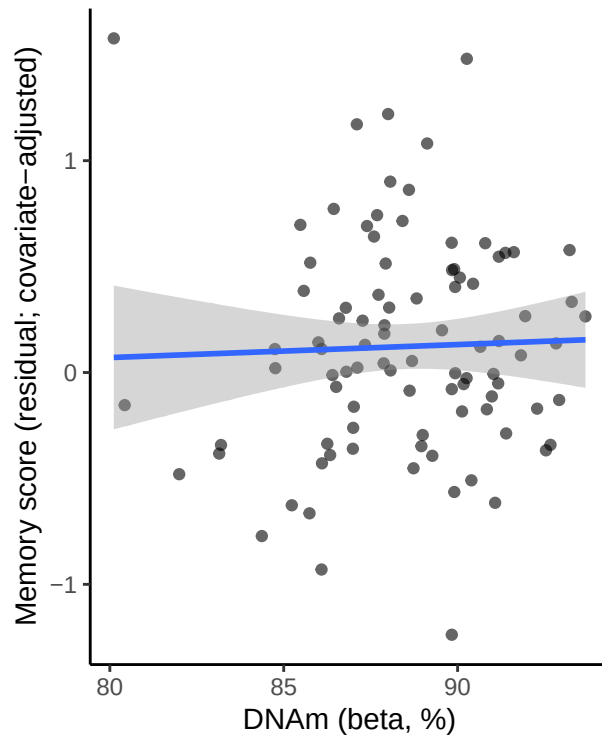


Supplementary Figure 2 The majority (all but one) of the CpGs with a significant DNAm $\times$ pTau interaction had non-significant marginal associations with CSF pTau181 and memory score (PHC_MEM adjusted for age, sex, estimated cell type proportions, and number of *APOE4* alleles)



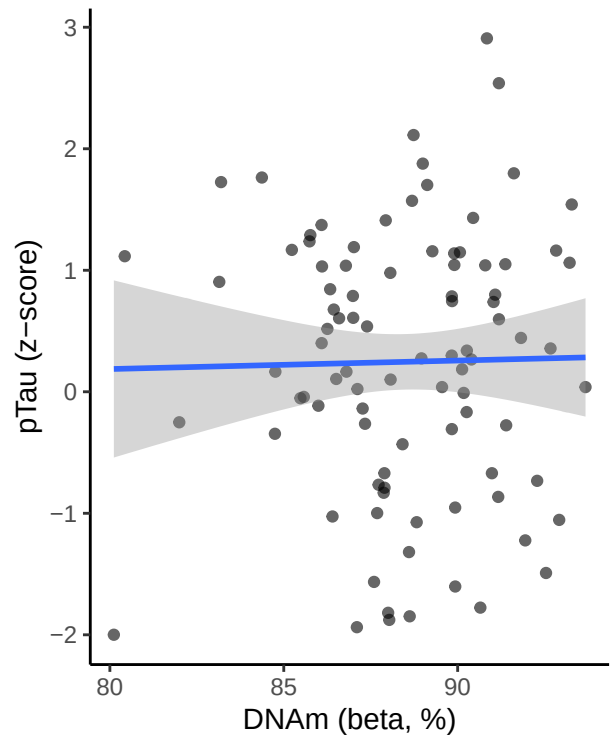
Residual cognition vs DNAm

CpG cg08579041
Spearman $\rho = 0.09$, $p = 0.396$



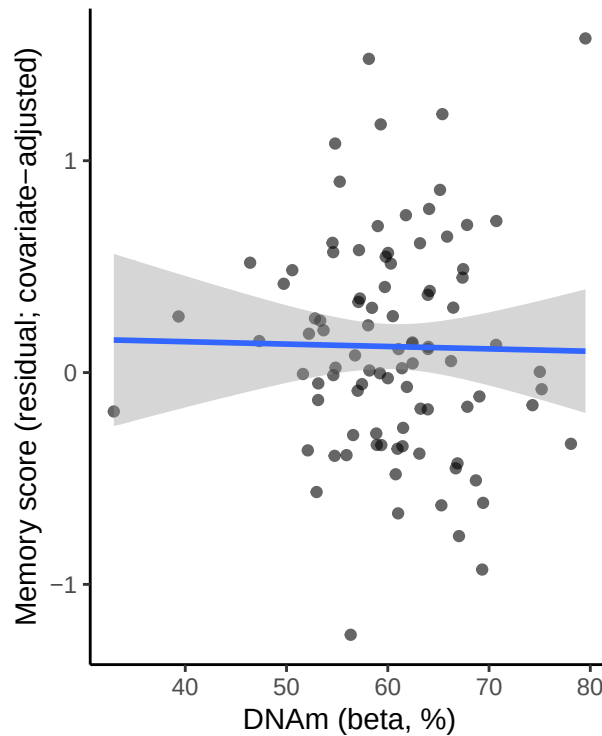
pTau vs DNAm

CpG cg08579041
Spearman $\rho = -0.01$, $p = 0.962$



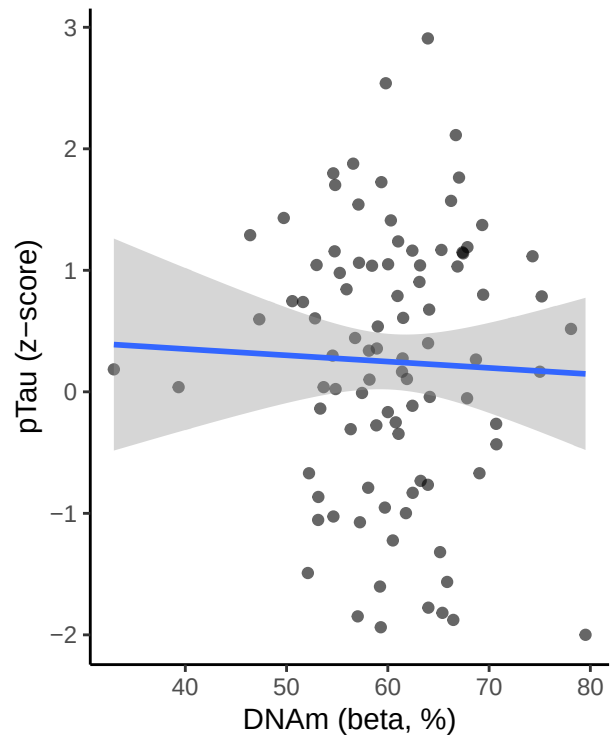
Residual cognition vs DNAm

CpG cg11145222
Spearman $\rho = -0.08$, $p = 0.469$



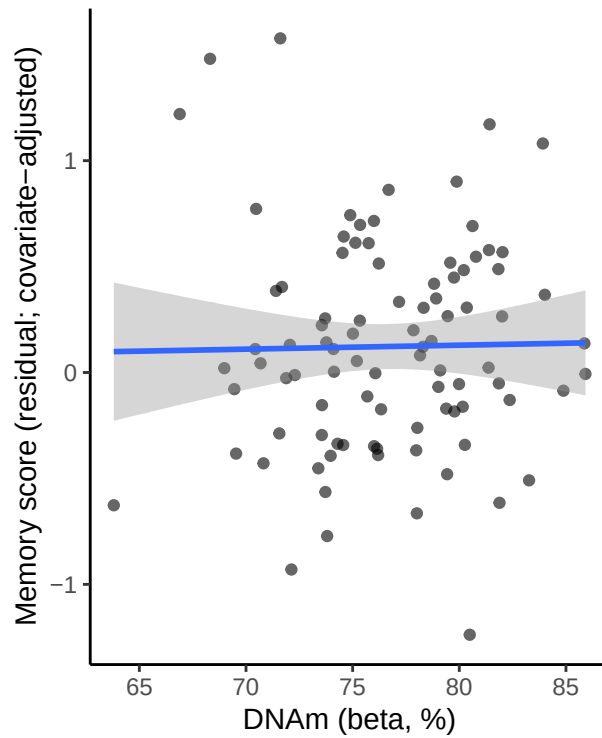
pTau vs DNAm

CpG cg11145222
Spearman $\rho = -0.01$, $p = 0.953$



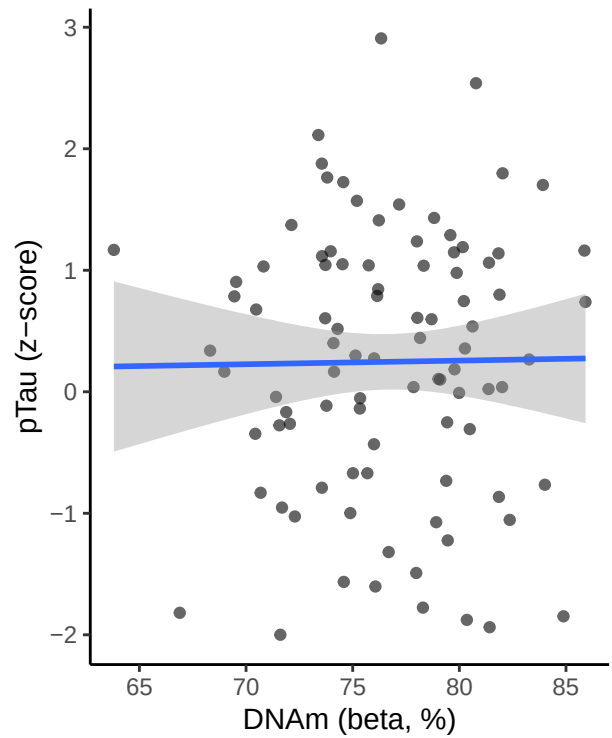
Residual cognition vs DNAm

CpG cg24481207
Spearman $\rho = 0.09$, $p = 0.419$



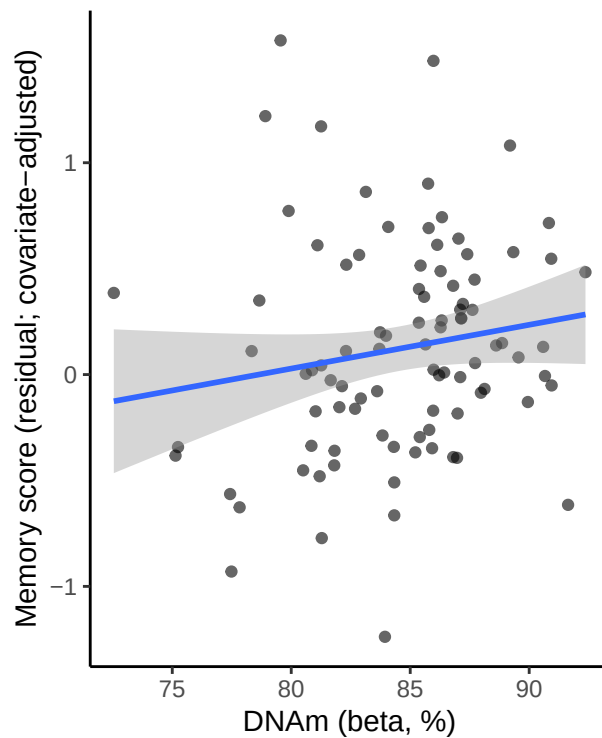
pTau vs DNAm

CpG cg24481207
Spearman $\rho = 0.02$, $p = 0.833$



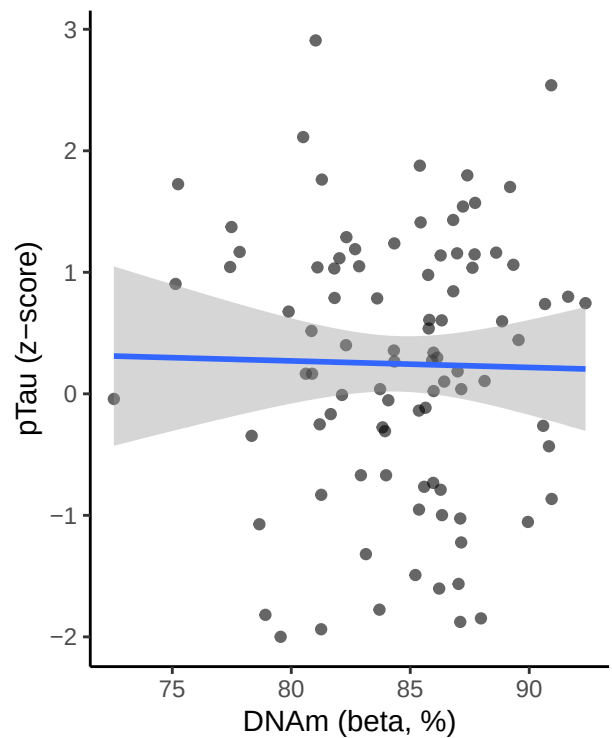
Residual cognition vs DNAm

CpG cg26869675
Spearman $\rho = 0.22$, $p = 0.0384$

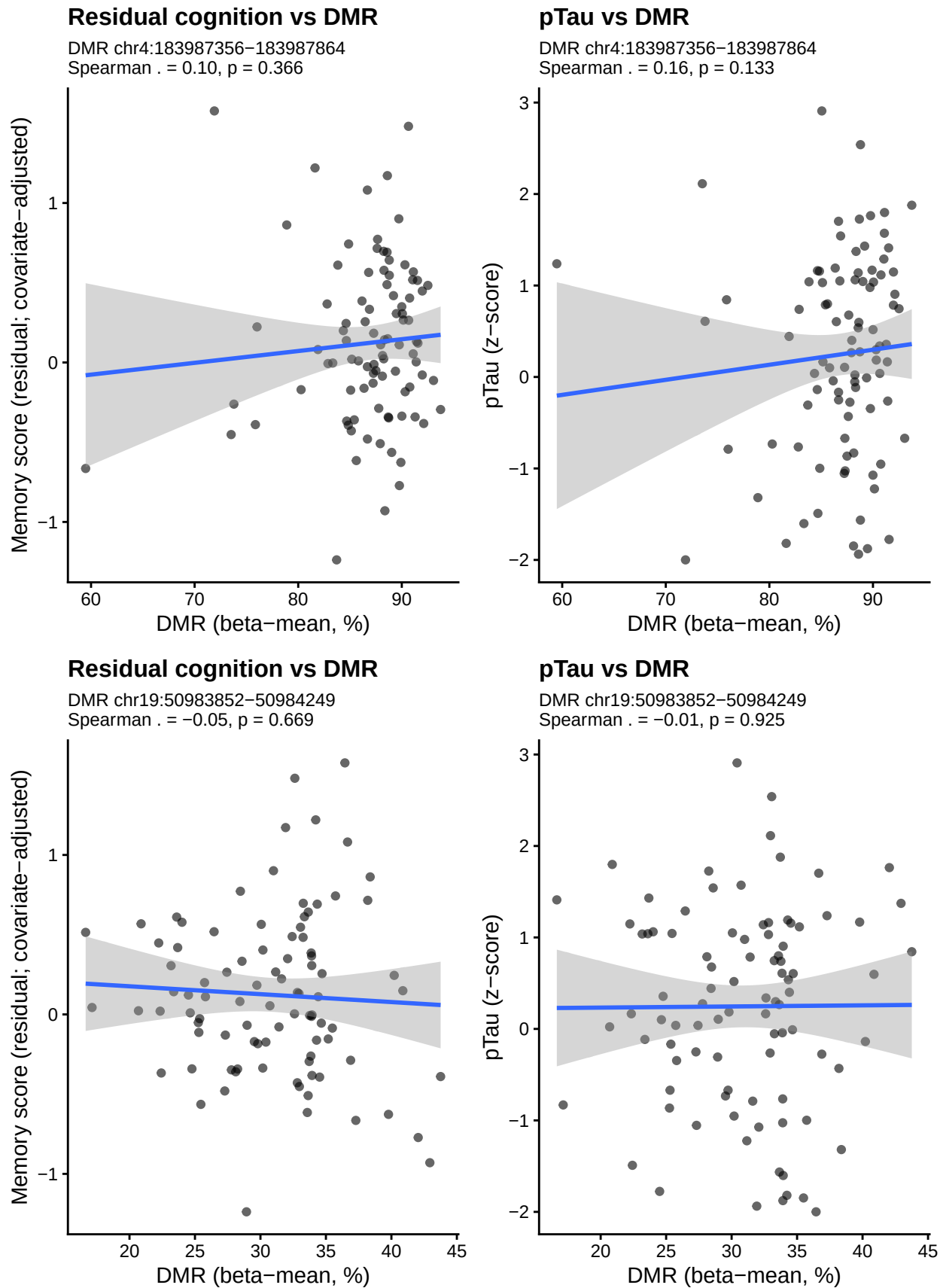


pTau vs DNAm

CpG cg26869675
Spearman $\rho = 0.00$, $p = 0.996$

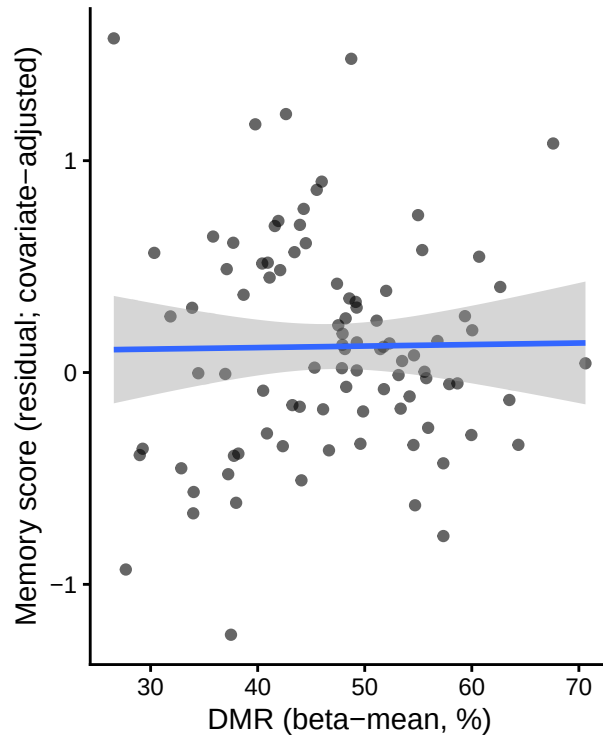


Supplementary Figure 3 The majority (all but one) of the DMRs had non-significant marginal associations with CSF pTau181 and memory score (PHC_MEM adjusted for age, sex, estimated cell type proportions, and number of *APOE4* alleles)



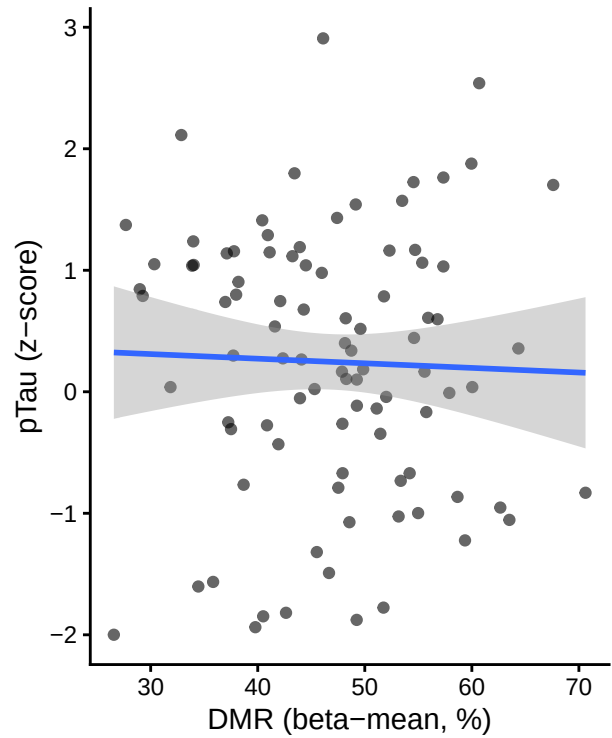
Residual cognition vs DMR

DMR chr6:32095996–32096480
Spearman ρ = -0.00, p = 0.982



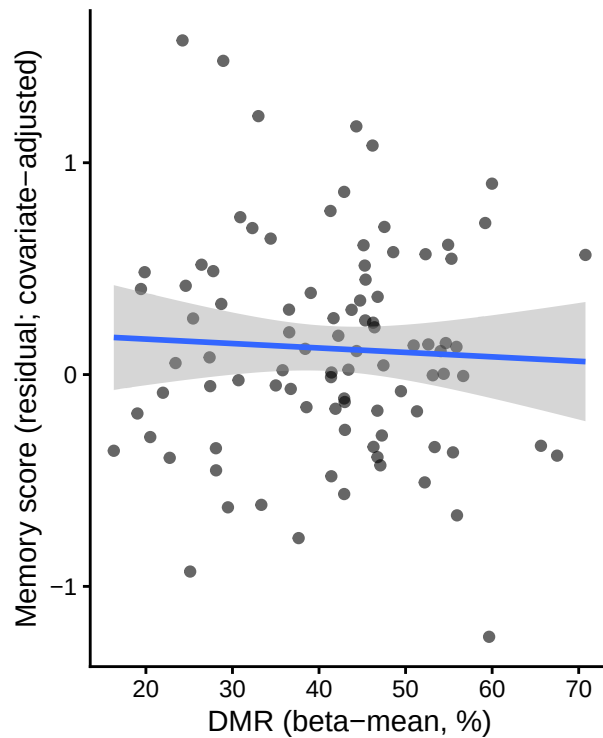
pTau vs DMR

DMR chr6:32095996–32096480
Spearman ρ = -0.07, p = 0.504



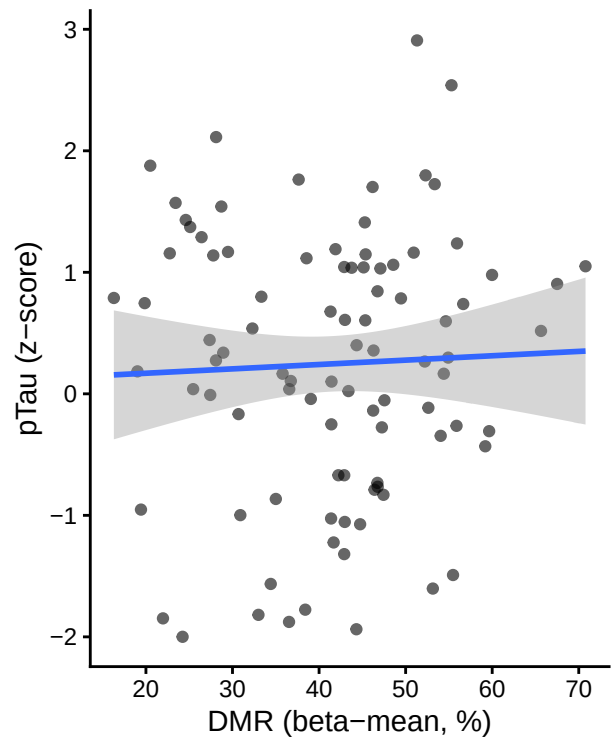
Residual cognition vs DMR

DMR chr5:110726641–110727135
Spearman ρ = -0.01, p = 0.914



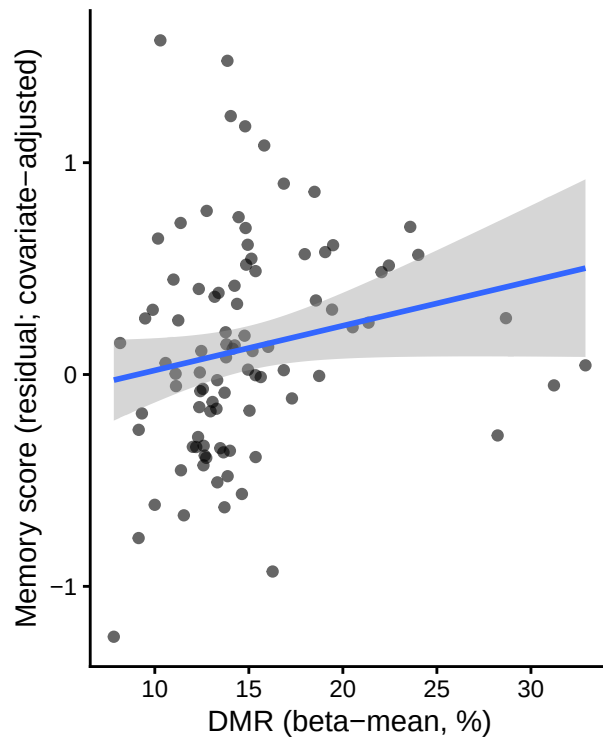
pTau vs DMR

DMR chr5:110726641–110727135
Spearman ρ = 0.01, p = 0.914



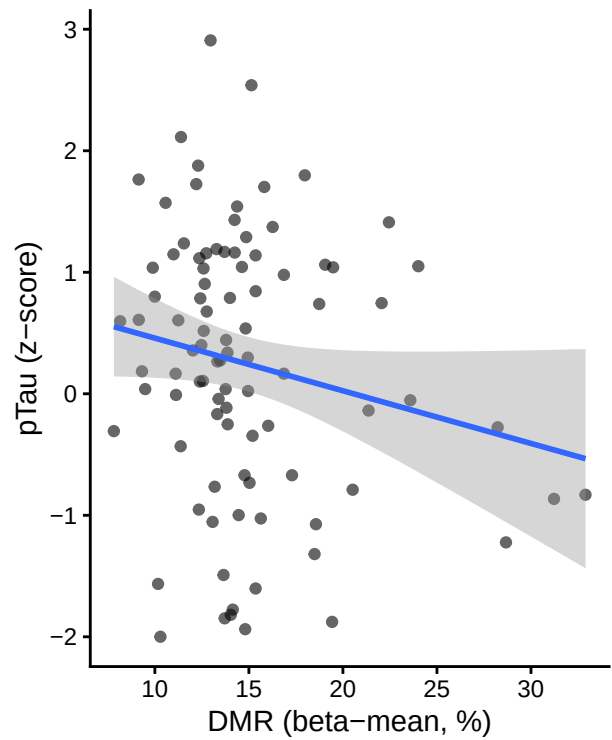
Residual cognition vs DMR

DMR chr10:132142481-132142678
Spearman $\rho = 0.32$, $p = 0.0018$



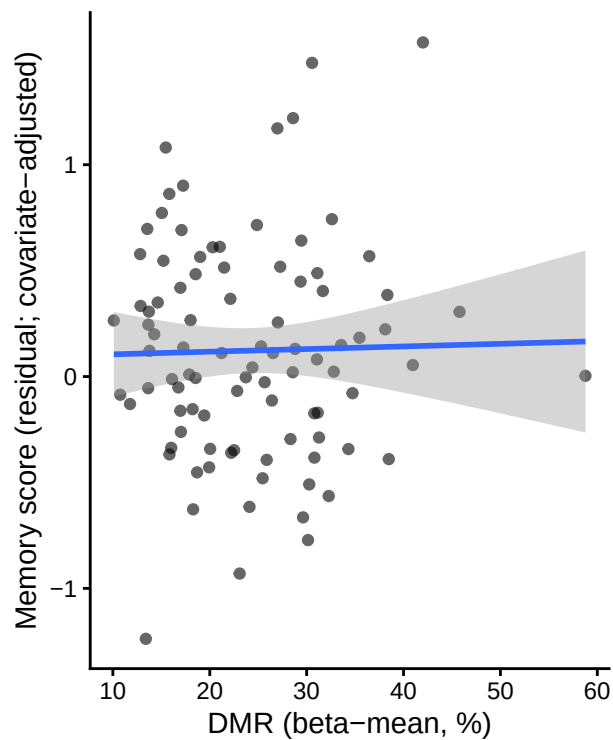
pTau vs DMR

DMR chr10:132142481-132142678
Spearman $\rho = -0.16$, $p = 0.125$



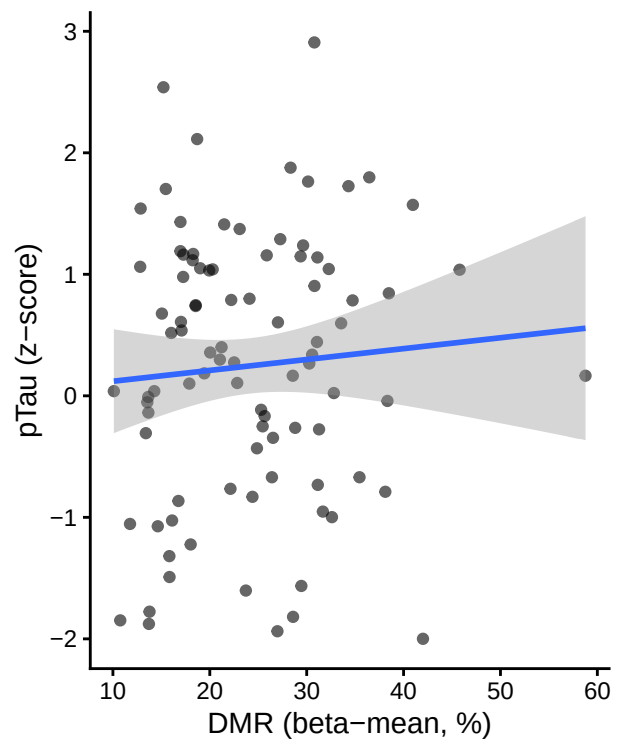
Residual cognition vs DMR

DMR chr5:14870484-14870639
Spearman $\rho = -0.06$, $p = 0.567$



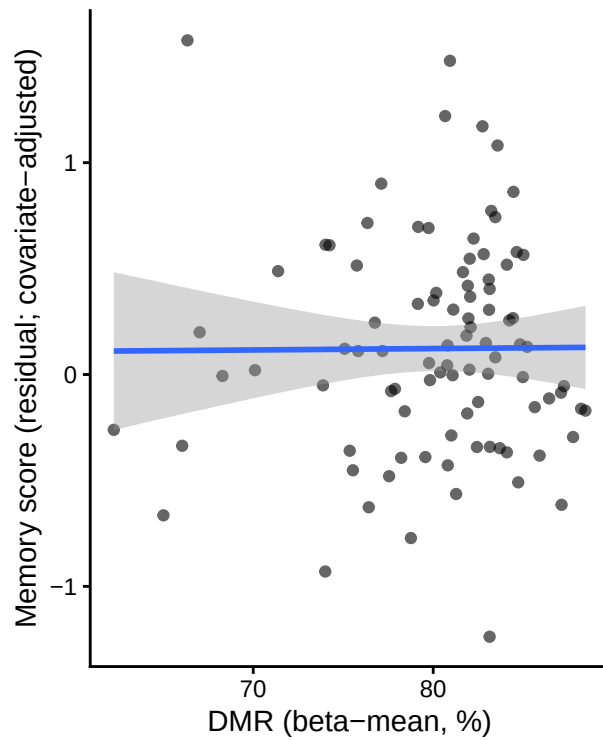
pTau vs DMR

DMR chr5:14870484-14870639
Spearman $\rho = 0.09$, $p = 0.384$



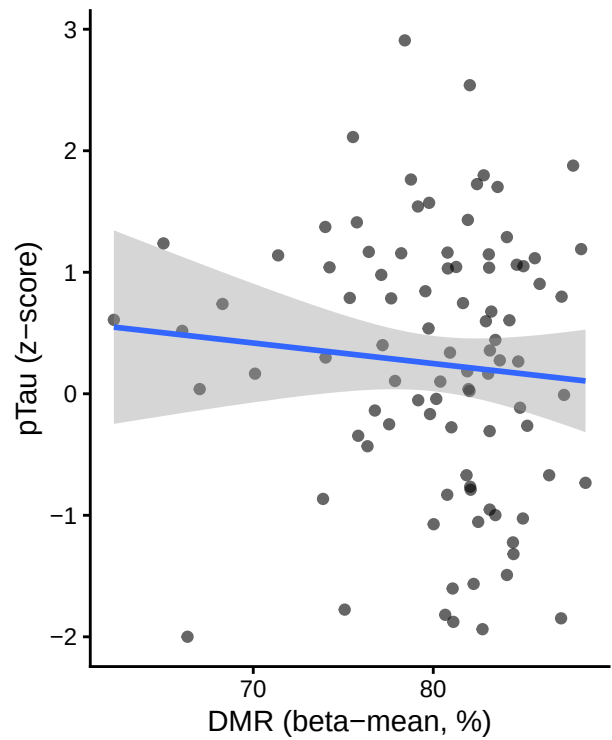
Residual cognition vs DMR

DMR chr13:75870661-75870928
Spearman ρ = 0.00, p = 0.971



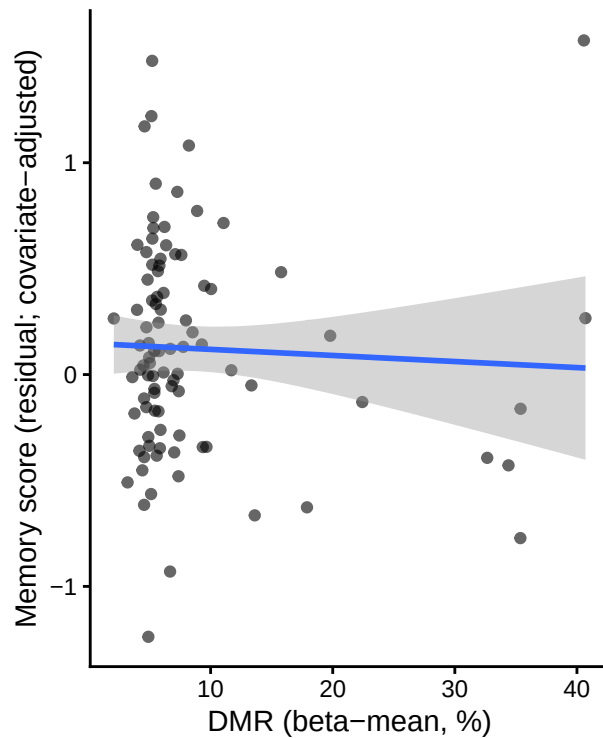
pTau vs DMR

DMR chr13:75870661-75870928
Spearman ρ = -0.10, p = 0.321



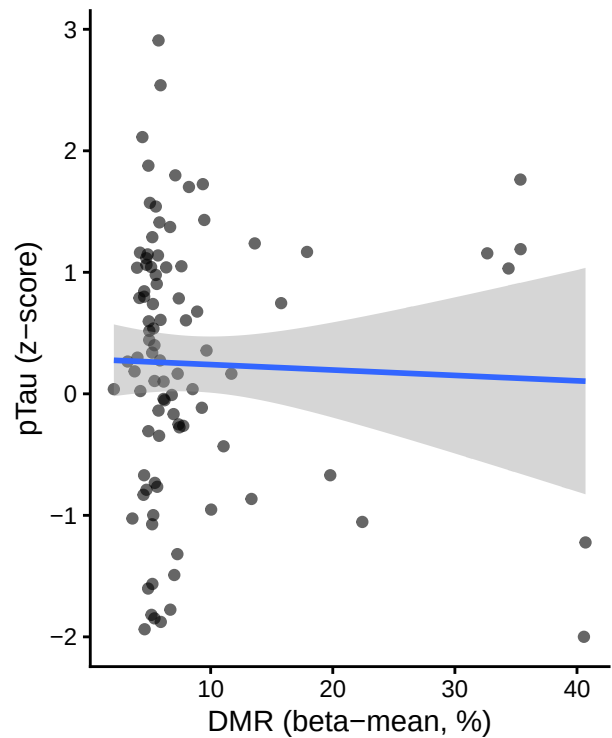
Residual cognition vs DMR

DMR chr14:73246028-73246258
Spearman ρ = 0.01, p = 0.926



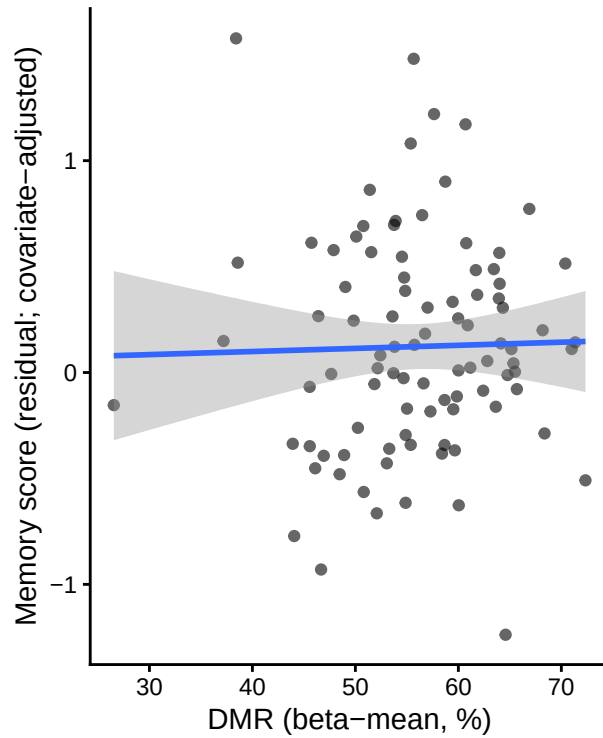
pTau vs DMR

DMR chr14:73246028-73246258
Spearman ρ = 0.01, p = 0.945



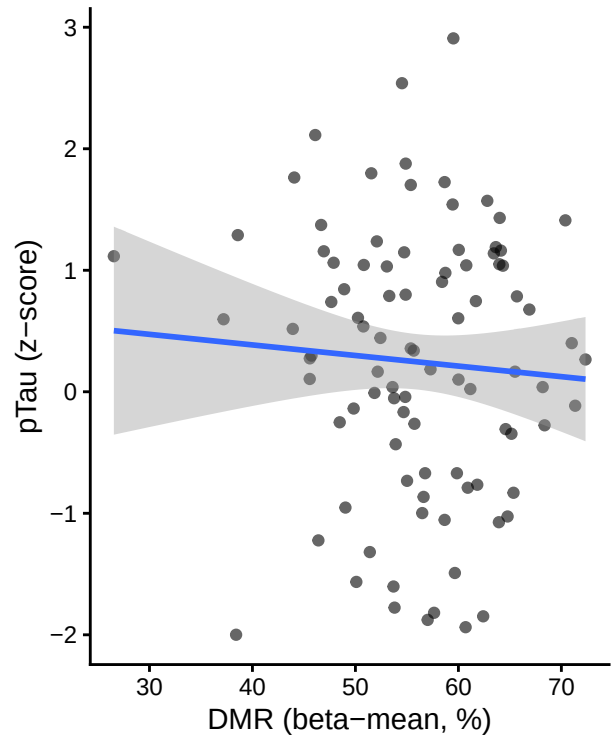
Residual cognition vs DMR

DMR chr6:7468547–7468818
Spearman $\rho = 0.09$, $p = 0.413$



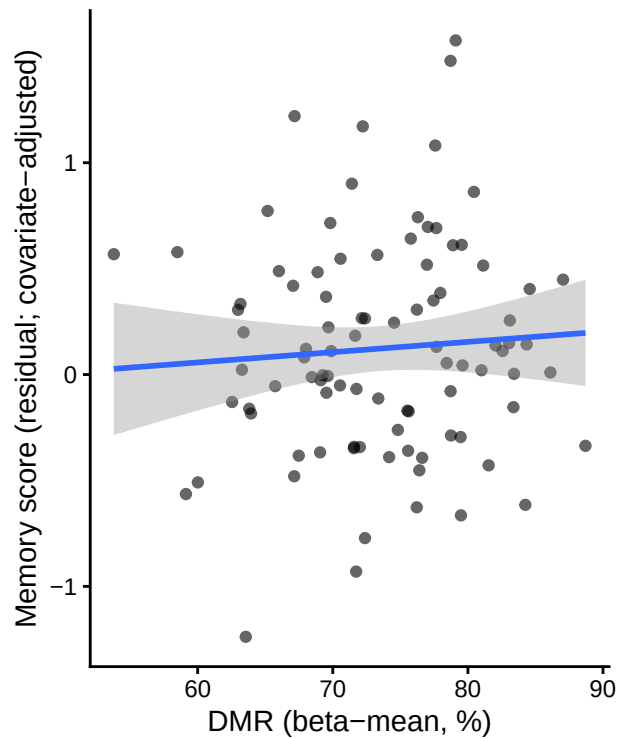
pTau vs DMR

DMR chr6:7468547–7468818
Spearman $\rho = -0.08$, $p = 0.45$



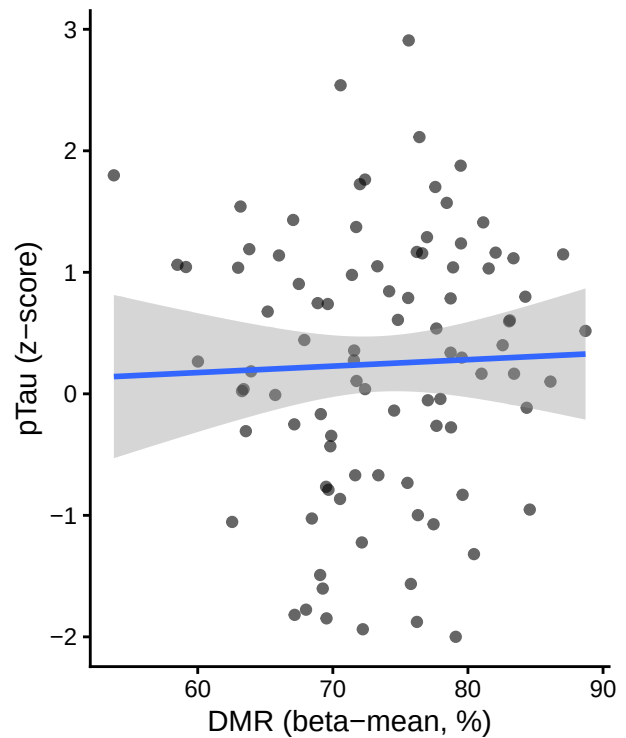
Residual cognition vs DMR

DMR chr8:142778252–142778573
Spearman $\rho = 0.07$, $p = 0.516$



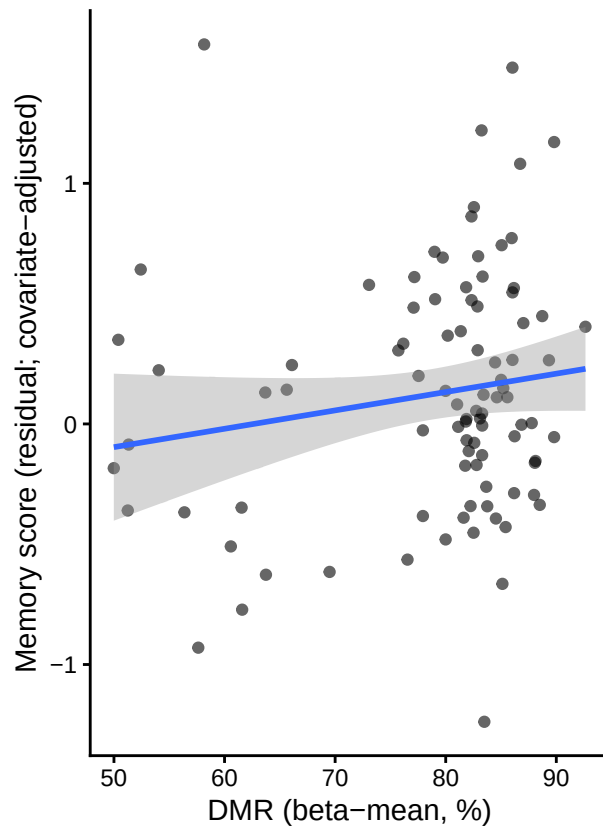
pTau vs DMR

DMR chr8:142778252–142778573
Spearman $\rho = 0.07$, $p = 0.512$



Residual cognition vs DMR

DMR chr11:18411952-18412200
Spearman $\rho = 0.13$, $p = 0.215$



pTau vs DMR

DMR chr11:18411952-18412200
Spearman $\rho = 0.06$, $p = 0.598$

