# Applying Partial Least Squares Regression (PLSR) To Explore Associations Between Cortical Thickness and Subvolume Using ADNI Data

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**Descriptive Statistics: Gender and Education**

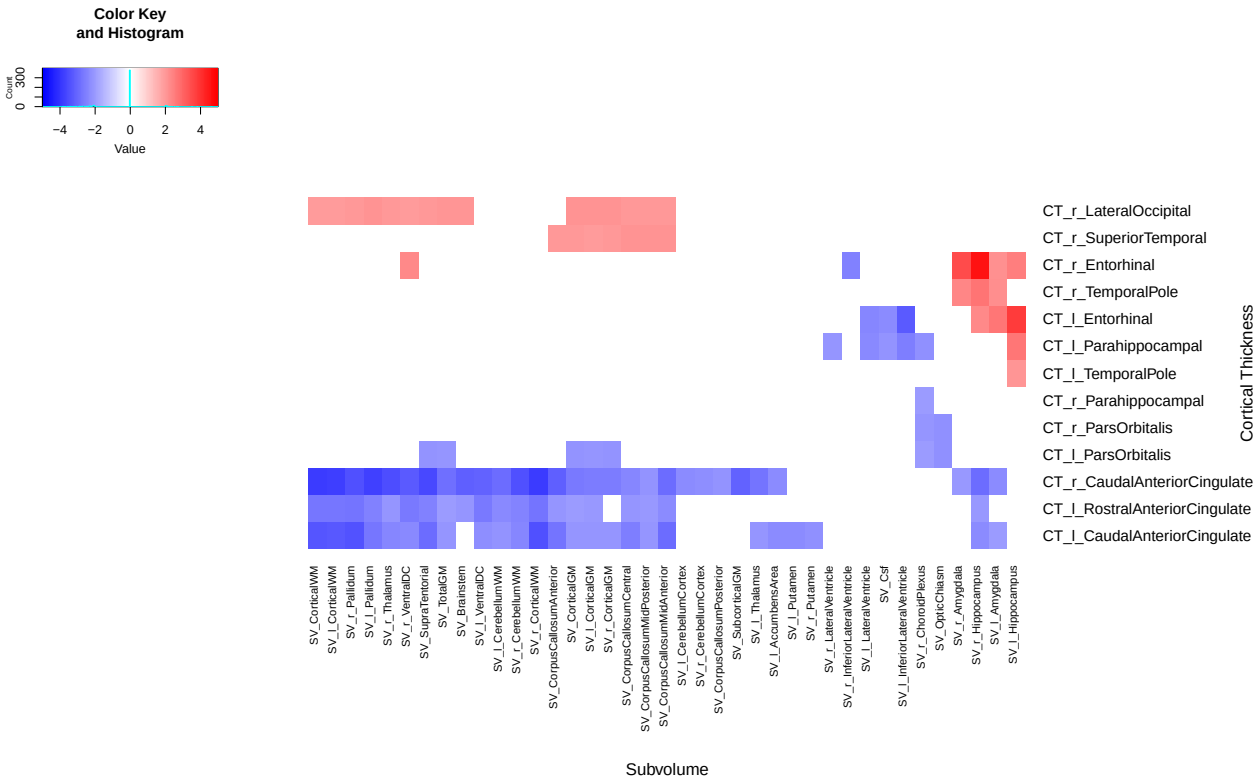
| Gender | Count |
|---|---|
| 1 | 754 |
| 2 | 616 |
| Total | 1370 |

| Education | Count |
|---|---|
| High | 1168 |
| Low | 202 |
| Total | 1370 |

**Age Summary**

| | Baseline Age |
|---|---|
| Min. | 54.75702 |
| 1st Qu. | 69.15332 |
| Median | 73.75359 |
| Mean | 73.64944 |
| 3rd Qu. | 78.52019 |
| Max. | 91.56194 |

ADNI data was used to explore associations between cortical thickness and subvolume measures. One hundred boostraped sets were generated, on which partial least squares regression was applied with subvolume as the outcome and cortical thickness as the predictor, using 5-fold cross validation. The optimal number of components was calculated and the beta coefficients were averaged across all 100 datasets. The following heat map summarizes the significant associations.


Color Key
and Histogram
Count
0
300
−4
−2
0
2
4
Value
CT_r_LateralOccipital
CT_r_SuperiorTemporal
CT_r_Entorhinal
CT_r_TemporalPole
CT_l_Entorhinal
CT_l_Parahippocampal
CT_l_TemporalPole
CT_r_Parahippocampal
CT_r_ParsOrbitalis
CT_l_ParsOrbitalis
CT_r_CaudalAnteriorCingulate
CT_l_RostralAnteriorCingulate
CT_l_CaudalAnteriorCingulate
Cortical Thickness
SV_CorticalWM
SV_l_CorticalWM
SV_r_Pallidum
SV_l_Pallidum
SV_r_Thalamus
SV_r_VentralDC
SV_SupraTentorial
SV_TotalGM
SV_Brainstem
SV_l_VentralDC
SV_l_CerebellumWM
SV_r_CerebellumWM
SV_r_CorticalWM
SV_CorpusCallosumAnterior
SV_CorticalGM
SV_l_CorticalGM
SV_r_CorticalGM
SV_CorpusCallosumCentral
SV_CorpusCallosumMidPosterior
SV_CorpusCallosumMidAnterior
SV_l_CerebellumCortex
SV_r_CerebellumCortex
SV_CorpusCallosumPosterior
SV_SubcorticalGM
SV_l_Thalamus
SV_l_AccumbensArea
SV_l_Putamen
SV_r_Putamen
SV_r_LateralVentricle
SV_r_InferiorLateralVentricle
SV_l_LateralVentricle
SV_Csf
SV_l_InferiorLateralVentricle
SV_r_ChoroidPlexus
SV_OpticChiasm
SV_r_Amygdala
SV_r_Hippocampus
SV_l_Amygdala
SV_l_Hippocampus
Subvolume