ComBatLS best replicates centile predictions across simulated sex-imbalanced sites. A) Brain charts of global white matter volume in females and males when derived from data harmonized across simulated sites with ComBat, ComBat-GAM, or ComBatLS relative to unharmonized ("true") data. Line color corresponds to ComBat configuration, dotted line corresponds to true data. Age values jittered slightly for visualization. B) Absolute centile errors, or distance in centile space between subjects' raw centiles and centiles derived from data harmonized with different ComBat configurations, of global volumetric features. C) Median absolute centile errors across brain features in data harmonized with varying ComBat configurations. Abbrv: WMV, white matter volume, GMV, cortical gray matter volume, sGMV, subcortical gray matter volume, CT, cortical thickness; SA, surface area;

***: Significant after Benjamini-Hochberg correction with false discovery rate of 0.05.