Supplementary Table 1. Group comparison of SUVRs in all supratentorial AAL template ROIs investigated

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region | HC (n=5) | MS (n=12) | SPMS (n=5) | RRMS (n=7) |
| Precentral gyrus | 1.307±0.201 | 1.187±0.37 | 1.385±0.212 | 1.045±0.407 |
| Superior frontal gyrus, dorsolateral | 1.303±0.23 | 1.133±0.155 | 1.057±0.116 | 1.187±0.163 |
| Superior frontal gyrus, orbital | 1.091±0.131 | 1.13±0.103 | 1.181±0.135 | 1.095±0.06 |
| Middle frontal gyrus | 1.25±0.077 | 1.171±0.069 | 1.133±0.062 | 1.198±0.064 |
| Middle frontal gyrus, orbital | 1.205±0.157 | 1.217±0.091 | 1.209±0.104 | 1.223±0.088 |
| Inferior frontal gyrus, opercular | 0.995±0.118 | 1.082±0.12 | 1.12±0.059 | 1.054±0.148 |
| Inferior frontal gyrus, triangular | 1.236±0.071 | 1.149±0.081 | 1.142±0.099 | 1.153±0.074 |
| Inferior frontal gyrus, orbital | 1.036±0.184 | 1.1±0.071 | 1.088±0.046 | 1.109±0.087 |
| Rolandic operculum | 0.856±0.053 | 1.031±0.119 | 1.053±0.087 | 1.014±0.142 |
| Supplementary motor area | 1.474±0.49 | 1.118±0.158 | 1.057±0.161 | 1.161±0.153 |
| Olfactory cortex | 0.795±0.404 | 0.957±0.223 | 1.035±0.197 | 0.902±0.239 |
| Superior frontal gyrus, medial | 1.291±0.178 | 1.086±0.103 | 1.081±0.113 | 1.089±0.104 |
| Superior frontal gyrus, medial orbital | 1.059±0.054 | 1.107±0.074 | 1.072±0.035 | 1.133±0.086 |
| Gyrus rectus | 1.156±0.147 | 1.15±0.089 | 1.138±0.115 | 1.159±0.074 |
| Insula | 0.95±0.063 | 1.009±0.098 | 1.068±0.096 | 0.966±0.08 |
| Anterior cingulate gyrus | 1.062±0.052 | 1.053±0.082 | 1.056±0.079 | 1.051±0.09 |
| Mid-cingulate gyrus | 1.013±0.049 | 1.131±0.097 | 1.132±0.048 | 1.13±0.125 |
| Posterior cingulate gyrus | 0.961±0.074 | 1.106±0.158 | 1.153±0.165 | 1.072±0.156 |
| Hippocampus | 0.88±0.096 | 1.02±0.106 | 1.068±0.093 | 0.985±0.107 |
| Parahippocampus | 0.854±0.049 | 0.914±0.075 | 0.976±0.048 | 0.87±0.056 |
| Amygdala  | 0.898±0.125 | 1.037±0.075 | 1.058±0.054 | 1.022±0.087 |
| Calcarine fissure and surrounding cortex | 0.994±0.141 | 1.056±0.123 | 1.095±0.18 | 1.028±0.063 |
| Cuneus | 1.37±0.105 | 1.128±0.108 | 1.108±0.148 | 1.143±0.078 |
| Lingual gyrus | 1.146±0.073 | 1.143±0.136 | 1.144±0.098 | 1.142±0.165 |
| Superior occipital lobe | 1.253±0.147 | 1.112±0.195 | 1.064±0.196 | 1.146±0.201 |
| Middle occipital lobe | 1.182±0.074 | 1.172±0.088 | 1.211±0.093 | 1.144±0.078 |
| Inferior occipital lobe | 1.237±0.288 | 1.241±0.112 | 1.24±0.119 | 1.241±0.117 |
| Fusiform gyrus | 0.972±0.112 | 1.014±0.07 | 1.045±0.075 | 0.993±0.063 |
| Postcentral gyrus | 0.81±0.516 | 0.956±0.332 | 1.068±0.165 | 0.876±0.408 |
| Superior parietal gyrus | 0.909±0.352 | 0.973±0.255 | 0.999±0.289 | 0.954±0.25 |
| Inferior parietal gyrus | 1.018±0.204 | 0.976±0.139 | 0.999±0.11 | 0.958±0.162 |
| Supramarginal gyrus | 1.161±0.087 | 1.207±0.077 | 1.247±0.043 | 1.177±0.085 |
| Angular gyrus | 1.22±0.143 | 1.109±0.11 | 1.13±0.145 | 1.094±0.087 |
| Precuneus | 1.1±0.292 | 0.963±0.159 | 0.991±0.123 | 0.943±0.188 |
| Paracentral lobule¶ | 1.512±0.355 | 1.07±0.46 | 1.051±0.395 | 0.686±1.193 |
| Caudate nucleus | 0.627±0.129 | 0.664±0.12 | 0.7±0.125 | 0.639±0.119 |
| Putamen | 0.892±0.052 | 0.93±0.052 | 0.974±0.015 | 0.899±0.047 |
| Pallidum | 0.994±0.058 | 0.98±0.087 | 1.037±0.074 | 0.939±0.075 |
| Thalamus | 1.087±0.06 | 1.162±0.1 | 1.25±0.018 | 1.099±0.084 |
| Heschl gyrus | 1.044±0.238 | 1.219±0.196 | 1.293±0.212 | 1.166±0.18 |
| Superior temporal gyrus | 1.108±0.141 | 1.112±0.053 | 1.106±0.071 | 1.116±0.041 |
| Temporal pole: superior temporal gyrus | 0.947±0.136 | 0.931±0.082 | 0.962±0.08 | 0.909±0.082 |
| Middle temporal gyrus | 1.131±0.07 | 1.141±0.046 | 1.15±0.035 | 1.135±0.054 |
| Temporal pole: middle temporal gyrus | 0.883±0.214 | 0.869±0.125 | 0.863±0.114 | 0.874±0.141 |
| Inferior temporal gyrus | 1.153±0.063 | 1.158±0.035 | 1.172±0.033 | 1.149±0.035 |

Data represent average of right and left hemispheric regions, mean and standard deviation, ¶ SUVR in the MS group is n=11 due to image noise in one subject in this region; AAL=Automated Anatomical labeling; MS=multiple sclerosis, RR=relapsing-remitting, SP=secondary progressive, HC=healthy controls, ROI=region-of-interest; SUVR=standardized uptake value ratio

Supplementary Table 2. Effect Sizes for subgroup comparisons for cortical and subcortical regions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region | MS - HC | SPMS - RRMS | RRMS - HC | SPMS - HC |
| Precentral gyrus | -0.404 | 1.049 | -0.817 | 0.378 |
| Superior frontal gyrus, dorsolateral | -0.868 | -0.918 | -0.581 | -1.350 |
| Superior frontal gyrus, orbital | 0.337 | 0.826 | 0.038 | 0.676 |
| Middle frontal gyrus | -1.079 | -1.041 | -0.728 | -1.678 |
| Middle frontal gyrus, orbital | 0.094 | -0.142 | 0.140 | 0.031 |
| Inferior frontal gyrus, opercular | 0.725 | 0.581 | 0.440 | 1.336 |
| Inferior frontal gyrus, triangular | -1.149 | -0.131 | -1.141 | -1.096 |
| Inferior frontal gyrus, orbital | 0.462 | -0.309 | 0.509 | 0.387 |
| Rolandic operculum | 1.904 | 0.333 | 1.485 | 2.744 |
| Supplementary motor area | -0.980 | -0.663 | -0.863 | -1.146 |
| Olfactory cortex | 0.497 | 0.607 | 0.323 | 0.755 |
| Superior frontal gyrus, medial | -1.411 | -0.073 | -1.384 | -1.407 |
| Superior frontal gyrus, medial orbital | 0.737 | -0.933 | 1.020 | 0.264 |
| Gyrus rectus | -0.051 | -0.224 | 0.025 | -0.143 |
| Insula | 0.717 | 1.160 | 0.227 | 1.471 |
| Anterior cingulate gyrus | -0.135 | 0.054 | -0.152 | -0.099 |
| Mid-cingulate gyrus | 1.538 | 0.021 | 1.233 | 2.467 |
| Posterior cingulate gyrus | 1.171 | 0.507 | 0.905 | 1.501 |
| Hippocampus | 1.375 | 0.837 | 1.025 | 1.987 |
| Parahippocampus | 0.955 | 2.038 | 0.303 | 2.515 |
| Amygdala  | 1.341 | 0.489 | 1.143 | 1.647 |
| Calcarine fissure and surrounding cortex | 0.468 | 0.495 | 0.312 | 0.625 |
| Cuneus | -2.277 | -0.296 | -2.463 | -2.046 |
| Lingual gyrus | -0.031 | 0.017 | -0.034 | -0.023 |
| Superior occipital lobe | -0.818 | -0.412 | -0.607 | -1.089 |
| Middle occipital lobe | -0.126 | 0.779 | -0.501 | 0.343 |
| Inferior occipital lobe | 0.016 | -0.003 | 0.016 | 0.015 |
| Fusiform gyrus | 0.452 | 0.746 | 0.226 | 0.760 |
| Postcentral gyrus | 0.338 | 0.618 | 0.143 | 0.675 |
| Superior parietal gyrus | 0.208 | 0.167 | 0.148 | 0.281 |
| Inferior parietal gyrus | -0.241 | 0.296 | -0.321 | -0.110 |
| Supramarginal gyrus | 0.548 | 1.041 | 0.184 | 1.251 |
| Angular gyrus | -0.871 | 0.302 | -1.068 | -0.625 |
| Precuneus | -0.582 | 0.299 | -0.638 | -0.487 |
| Paracentral lobule | -1.136 | 0.211 | -1.073 | -1.229 |
| Caudate nucleus | 0.297 | 0.504 | 0.092 | 0.573 |
| Putamen | 0.726 | 2.149 | 0.140 | 2.121 |
| Pallidum | -0.197 | 1.308 | -0.825 | 0.637 |
| Thalamus | 0.900 | 2.482 | 0.156 | 3.654 |
| Heschl gyrus | 0.800 | 0.647 | 0.575 | 1.103 |
| Superior temporal gyrus | 0.034 | -0.184 | 0.078 | -0.023 |
| Temporal pole: superior temporal gyrus | -0.140 | 0.651 | -0.336 | 0.135 |
| Middle temporal gyrus | 0.171 | 0.332 | 0.061 | 0.341 |
| Temporal pole: middle temporal gyrus | -0.082 | -0.084 | -0.055 | -0.121 |
| Inferior temporal gyrus | 0.100 | 0.674 | -0.089 | 0.367 |

MS=multiple sclerosis, RR=relapsing-remitting, SP=secondary progressive, HC=healthy controls