BrainStructureAges report

For research only

version 1.0 release 01-Jun-2023

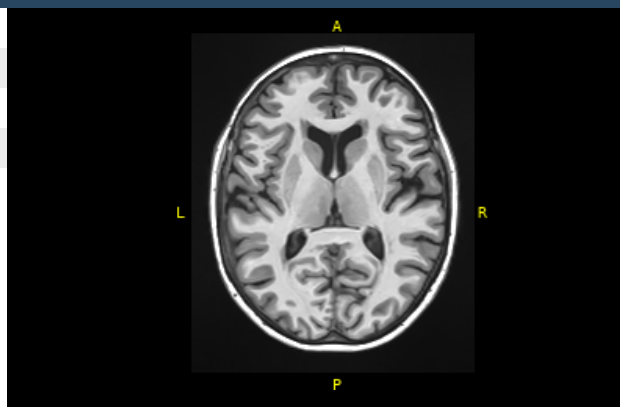
Subject: job1654357

Sex: Unknown

Age: 68.0

Report date: 08-Feb-2024

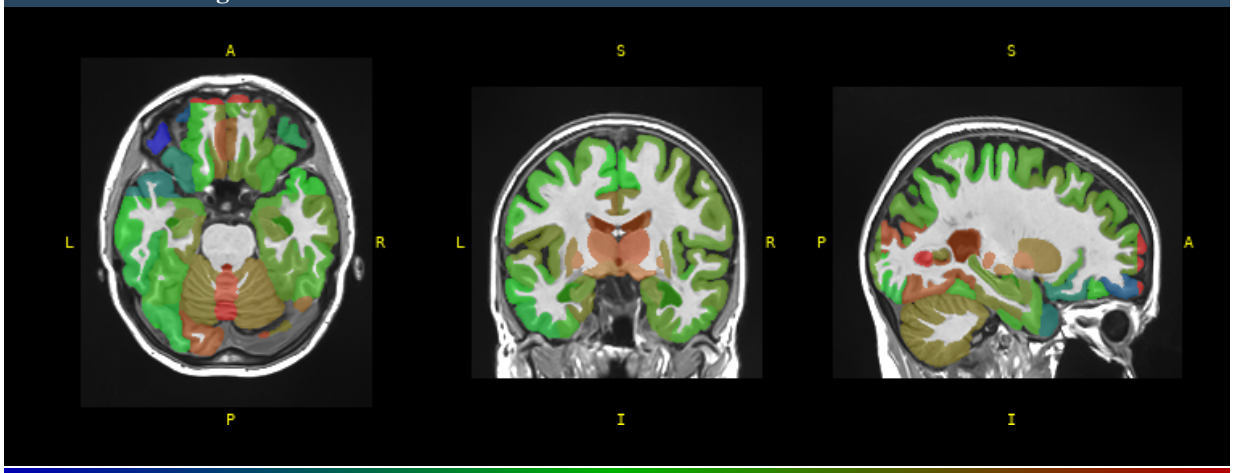
Quality control: A



Biological age prediction

Age estimation	71.46

Brain structure ages estimation



63.0 68.0 73.0

[1] Huy-Dung Nguyen, Michaël Clément, Boris Mansencal, Pierrick Coupé, *Brain Structure Ages - A new biomarker for multi-disease classification*, Hum Brain Mapp. 2024 Jan; 45(1) PDF

The quality control evaluates the input image quality after preprocessing. A = good, B = moderate (i.e., the output requires human verification) and C = bad (i.e., the output should not be used).

All the result images are located in the MNI space (neurological orientation).

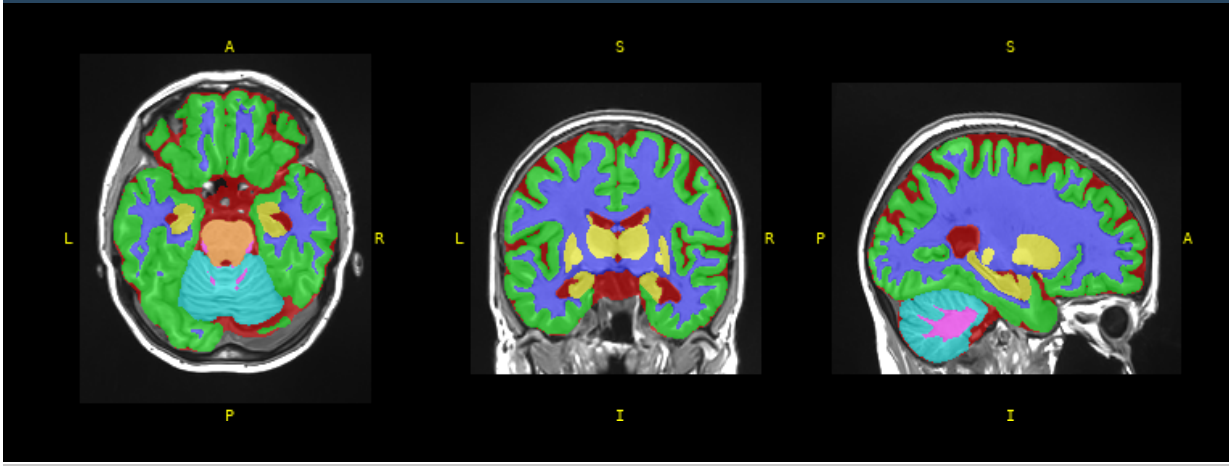
All ages are given in years.

Age estimations outside [subjects age -5y; subjects age +5y] are highlighted in the tables and clamped on figure.

Brain Structure Ages			
Subcortical	**Age**		**Age**
Right accumbens	71.01	Left accumbens	71.16
Right amygdala	70.01	Left amygdala	70.06
Right basal forebrain	70.15	Left basal forebrain	70.66
Right caudate	71.51	Left caudate	71.72
Right hippocampus	70.13	Left hippocampus	69.84
Right pallidum	71.33	Left pallidum	71.49
Right putamen	70.57	Left putamen	70.86
Right thalamus	71.88	Left thalamus	71.71
Right ventral DC	71.50	Left ventral DC	71.21
Cortical	**Age**		**Age**
Frontal lobe			
Right frontal pole	72.75	Left frontal pole	73.05
Right gyrus rectus	69.09	Left gyrus rectus	70.19
Right opercular inf. frontal gyrus	70.05	Left opercular inf. frontal gyrus	69.76
Right orbital inf. frontal gyrus	69.02	Left orbital inf. frontal gyrus	63.21
Right triangular inf. frontal gyrus	70.09	Left triangular inf. frontal gyrus	69.29
Right medial frontal cortex	71.26	Left medial frontal cortex	71.71
Right middle frontal gyrus	70.77	Left middle frontal gyrus	69.87
Right anterior orbital gyrus	69.87	Left anterior orbital gyrus	64.79
Right lateral orbital gyrus	66.67	Left lateral orbital gyrus	60.56
Right medial orbital gyrus	69.64	Left medial orbital gyrus	68.35
Right posterior orbital gyrus	68.71	Left posterior orbital gyrus	65.92
Right precentral gyrus	69.86	Left precentral gyrus	68.76
Right precentral gyrus medial segment	67.79	Left precentral gyrus medial segment	68.18
Right subcallosal area	69.96	Left subcallosal area	70.92
Right sup. frontal gyrus	69.52	Left sup. frontal gyrus	69.31
Right sup. frontal gyrus medial segment	72.10	Left sup. frontal gyrus medial segment	72.14
Right supplementary motor cortex	68.03	Left supplementary motor cortex	68.03
Temporal lobe			
Right fusiform gyrus	69.66	Left fusiform gyrus	68.77
Right planum polare	68.80	Left planum polare	68.77
Right planum temporale	70.02	Left planum temporale	70.00
Right inf. temporal gyrus	69.04	Left inf. temporal gyrus	67.34
Right middle temporal gyrus	69.82	Left middle temporal gyrus	67.88
Right sup. temporal gyrus	69.67	Left sup. temporal gyrus	69.05
Right transverse temporal gyrus	69.84	Left transverse temporal gyrus	70.25
Right temporal pole	67.97	Left temporal pole	65.64
Parietal lobe			
Right angular gyrus	72.03	Left angular gyrus	69.22
Right postcentral gyrus	69.87	Left postcentral gyrus	68.50
Right postcentral gyrus medial segment	67.34	Left postcentral gyrus medial segment	68.48
Right precuneus	70.00	Left precuneus	70.52
Right sup. parietal lobule	68.92	Left sup. parietal lobule	68.99
Right supramarginal gyrus	72.01	Left supramarginal gyrus	68.89

Occipital lobe			
Right calcarine cortex	72.73	Left calcarine cortex	72.98
Right cuneus	71.78	Left cuneus	72.67
Right lingual gyrus	72.10	Left lingual gyrus	71.70
Right occipital fusiform gyrus	70.54	Left occipital fusiform gyrus	67.44
Right inf. occipital gyrus	71.20	Left inf. occipital gyrus	68.01
Right middle occipital gyrus	72.09	Left middle occipital gyrus	69.48
Right sup. occipital gyrus	71.33	Left sup. occipital gyrus	71.95
Right occipital pole	70.72	Left occipital pole	69.65
Limbic cortex			
Right entorhinal area	69.10	Left entorhinal area	69.09
Right anterior cingulate gyrus	72.12	Left anterior cingulate gyrus	72.34
Right middle cingulate gyrus	70.39	Left middle cingulate gyrus	70.94
Right posterior cingulate gyrus	71.03	Left posterior cingulate gyrus	71.17
Right parahippocampal gyrus	69.63	Left parahippocampal gyrus	70.41
Insular cortex			
Right anterior insula	69.22	Left anterior insula	69.14
Right posterior insula	69.67	Left posterior insula	70.01
Right central operculum	69.59	Left central operculum	70.23
Right frontal operculum	69.28	Left frontal operculum	69.29
Right parietal operculum	71.06	Left parietal operculum	69.95
CSF	**Age**		**Age**
3rd ventricle	71.85	4th ventricle	72.32
Right inf. lateral ventricle	68.99	Left inf. lateral ventricle	68.93
Right lateral ventricle	71.70	Left lateral ventricle	71.79
Cerebellar vermis	**Age**		**Age**
Lobules I-V	72.18	Lobules VI-VII	72.83
Lobules VIII-X	72.11		

Tissue segmentation



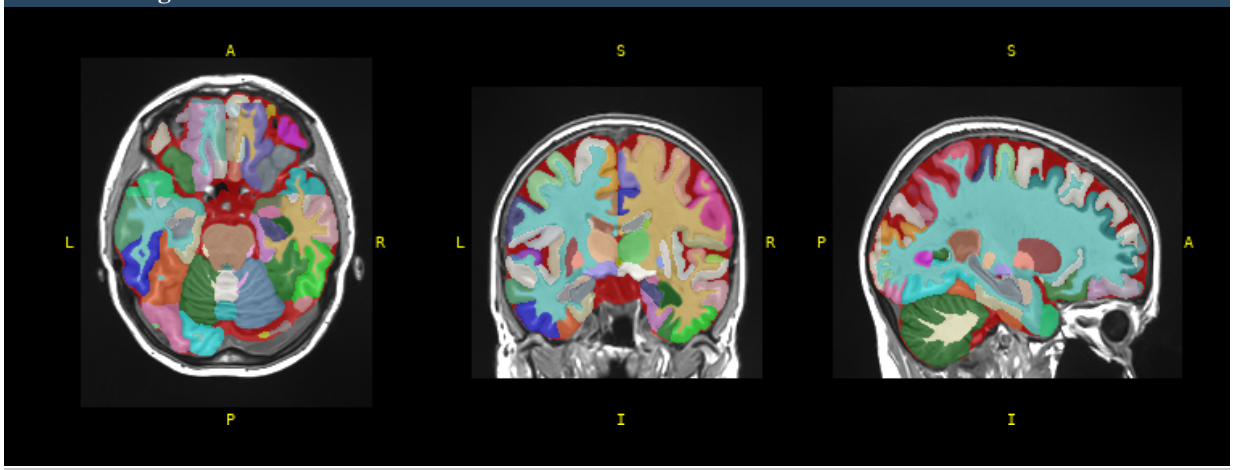
Tissue	Volume (cm^3 / %)	
White Matter (WM)	454.17 / 32.522	[28.259, 33.252]
Grey Matter (GM)	730.94 / 52.340	[49.746, 53.627]
Subcortical GM	44.19 / 3.164	[2.791, 3.358]
Cortical GM	593.21 / 42.477	[38.965, 42.505]
Cerebellar GM	93.54 / 6.698	[6.997, 8.706]
Cerebro Spinal Fluid (CSF)	192.99 / 13.820	[12.939, 19.827]
Brain (WM+GM)	1185.11 / 84.862	[78.950, 85.685]
Intracranial Cavity (IC)	1396.52 / 100.000	[100.000, 100.000]

Macrostructure segmentation

Structure	Total (cm^3 / %)	Right (cm^3 / %)	Left (cm^3 / %)	Asymmetry (%)
Cerebrum	1069.53 / 76.585	536.76 / 38.435	532.77 / 38.150	0.7451
	[69.497, 76.025]	[34.773, 38.060]	[34.660, 37.980]	[-1.230, 1.740]
Cerebrum WM	432.13 / 30.944	217.81 / 15.597	214.32 / 15.347	1.6134
	[26.659, 31.456]	[13.341, 15.728]	[13.320, 15.747]	[-1.795, 1.950]
Cerebrum GM	637.39 / 45.642	318.95 / 22.839	318.45 / 22.803	0.1564
	[42.003, 45.598]	[21.013, 22.865]	[20.967, 22.781]	[-1.266, 2.065]
Cerebellum*	106.14 / 7.600	53.60 / 3.838	52.54 / 3.762	2.0086
	[7.773, 9.781]	[3.916, 4.929]	[3.841, 4.860]	[-1.567, 4.856]
Cerebellum WM	22.04 / 1.578	11.02 / 0.789	11.02 / 0.789	0.0278
	[1.408, 2.021]	[0.699, 1.012]	[0.708, 1.012]	[-5.482, 4.579]
Cerebellum GM	84.10 / 6.022	42.58 / 3.049	41.52 / 2.973	2.5276
	[6.297, 7.898]	[3.171, 3.967]	[3.104, 3.919]	[-1.332, 5.488]
Vermis	9.44 / 0.676			
	[0.681, 0.923]			
Brainstem	18.42 / 1.319			
	[1.124, 1.471]			

** Cerebellum volumes do not include vermis volume.*

Structure segmentation



Subcortical	Total (cm^3 / %)	Right (cm^3 / %)	Left (cm^3 / %)	Asymmetry (%)
Accumbens	1.03 / 0.074 [0.045, 0.077]	0.54 / 0.039 [0.020, 0.037]	0.49 / 0.035 [0.024, 0.041]	9.6225 [-34.045, 7.374]
Amygdala	2.06 / 0.147 [0.131, 0.174]	1.08 / 0.078 [0.067, 0.090]	0.97 / 0.070 [0.063, 0.086]	10.8550 [-6.252, 18.223]
Basal forebrain	0.68 / 0.049 [0.045, 0.062]	0.33 / 0.024 [0.020, 0.029]	0.35 / 0.025 [0.024, 0.034]	-4.0449 [-35.225, 0.123]
Caudate	6.70 / 0.480 [0.340, 0.496]	3.42 / 0.245 [0.173, 0.251]	3.28 / 0.235 [0.166, 0.247]	3.9726 [-4.639, 10.035]
Hippocampus	7.57 / 0.542 [0.431, 0.581]	3.80 / 0.272 [0.215, 0.295]	3.77 / 0.270 [0.211, 0.291]	0.8287 [-7.365, 11.943]
Pallidum	2.82 / 0.202 [0.176, 0.235]	1.38 / 0.099 [0.086, 0.115]	1.44 / 0.103 [0.089, 0.120]	-4.0728 [-11.729, 2.627]
Putamen	8.01 / 0.574 [0.516, 0.693]	4.03 / 0.288 [0.256, 0.343]	3.99 / 0.285 [0.259, 0.351]	0.9926 [-7.241, 3.935]
Thalamus	15.33 / 1.097 [0.975, 1.175]	7.65 / 0.548 [0.484, 0.586]	7.68 / 0.550 [0.487, 0.591]	-0.3492 [-5.454, 3.920]
Ventral DC	8.57 / 0.614 [0.582, 0.716]	4.17 / 0.299 [0.286, 0.352]	4.40 / 0.315 [0.296, 0.364]	-5.2453 [-6.993, 0.449]

Cortical	Total (cm^3 / %)	Right (cm^3 / %)	Left (cm^3 / %)	Asymmetry (%)
Frontal lobe	192.93 / 13.815 [12.307, 14.058]	96.37 / 6.901 [6.160, 7.090]	96.57 / 6.915 [6.117, 7.004]	-0.2077 [-2.872, 4.843]
Frontal pole	8.16 / 0.584 [0.392, 0.573]	4.35 / 0.311 [0.207, 0.302]	3.81 / 0.273 [0.176, 0.287]	13.2758 [-9.624, 30.768]
Gyrus rectus	3.79 / 0.272 [0.238, 0.359]	2.31 / 0.166 [0.117, 0.192]	1.48 / 0.106 [0.105, 0.179]	44.1621 [-23.109, 39.976]
Opercular inf. frontal gyrus	7.03 / 0.504 [0.354, 0.593]	2.49 / 0.179 [0.164, 0.318]	4.54 / 0.325 [0.162, 0.308]	-58.1557 [-37.785, 44.829]
Orbital inf. frontal gyrus	4.26 / 0.305 [0.153, 0.283]	2.10 / 0.150 [0.068, 0.145]	2.16 / 0.155 [0.068, 0.154]	-2.9776 [-52.958, 49.483]
Triangular inf. frontal gyrus	6.73 / 0.482 [0.367, 0.618]	3.12 / 0.224 [0.166, 0.313]	3.61 / 0.258 [0.170, 0.331]	-14.4513 [-40.615, 33.957]
Medial frontal cortex	3.43 / 0.246 [0.194, 0.309]	1.85 / 0.132 [0.091, 0.169]	1.58 / 0.113 [0.088, 0.159]	15.5561 [-35.797, 42.541]
Middle frontal gyrus	39.66 / 2.840 [2.485, 3.240]	20.29 / 1.453 [1.215, 1.658]	19.37 / 1.387 [1.224, 1.625]	4.6851 [-13.669, 14.171]
Anterior orbital gyrus	3.35 / 0.240 [0.214, 0.363]	1.50 / 0.107 [0.104, 0.197]	1.85 / 0.133 [0.095, 0.188]	-21.4106 [-34.994, 49.183]
Lateral orbital gyrus	5.47 / 0.391 [0.268, 0.439]	2.73 / 0.196 [0.122, 0.228]	2.73 / 0.196 [0.125, 0.232]	-0.1119 [-41.696, 37.028]
Medial orbital gyrus	10.16 / 0.727 [0.573, 0.775]	5.11 / 0.366 [0.274, 0.392]	5.04 / 0.361 [0.282, 0.400]	1.3853 [-22.055, 15.257]
Posterior orbital gyrus	6.85 / 0.490 [0.375, 0.546]	3.45 / 0.247 [0.177, 0.281]	3.39 / 0.243 [0.179, 0.282]	1.7869 [-24.538, 24.634]
Precentral gyrus	28.31 / 2.027 [1.730, 2.121]	14.80 / 1.060 [0.847, 1.077]	13.51 / 0.967 [0.848, 1.074]	9.1297 [-12.152, 13.330]
Precentral gyrus medial segment	6.69 / 0.479 [0.334, 0.495]	3.27 / 0.234 [0.157, 0.256]	3.41 / 0.244 [0.162, 0.257]	-4.1629 [-29.433, 24.554]
Subcallosal area	3.26 / 0.234 [0.157, 0.300]	1.67 / 0.120 [0.078, 0.151]	1.59 / 0.114 [0.078, 0.151]	4.8277 [-14.709, 14.172]
Sup. frontal gyrus	31.58 / 2.262 [1.807, 2.424]	15.68 / 1.123 [0.867, 1.229]	15.91 / 1.139 [0.883, 1.245]	-1.4381 [-18.456, 15.484]
Sup. frontal gyrus medial segment	12.65 / 0.906 [0.733, 1.075]	6.30 / 0.451 [0.358, 0.592]	6.35 / 0.455 [0.317, 0.529]	-0.8948 [-21.491, 43.223]
Supplementary motor cortex	11.56 / 0.828 [0.667, 0.929]	5.33 / 0.382 [0.313, 0.477]	6.23 / 0.446 [0.316, 0.485]	-15.5413 [-28.386, 24.284]

Temporal lobe	115.06 / 8.239 [7.367, 8.657]	56.69 / 4.060 [3.685, 4.380]	58.37 / 4.179 [3.620, 4.326]	-2.9055 [-4.968, 7.713]
Fusiform gyrus	15.80 / 1.131 [0.918, 1.359]	7.18 / 0.514 [0.440, 0.708]	8.62 / 0.618 [0.441, 0.684]	-18.3332 [-19.353, 24.776]
Planum polare	3.64 / 0.261 [0.242, 0.349]	1.79 / 0.128 [0.118, 0.177]	1.85 / 0.133 [0.118, 0.182]	-3.4468 [-22.713, 20.536]
Planum temporale	3.87 / 0.277 [0.208, 0.371]	1.77 / 0.127 [0.080, 0.175]	2.10 / 0.150 [0.111, 0.210]	-17.0255 [-68.078, 14.951]
Inf. temporal gyrus	25.21 / 1.805 [1.596, 2.106]	11.10 / 0.795 [0.766, 1.071]	14.12 / 1.011 [0.785, 1.092]	-23.9597 [-19.516, 15.962]
Middle temporal gyrus	30.29 / 2.169 [1.851, 2.379]	15.88 / 1.137 [0.913, 1.210]	14.41 / 1.032 [0.876, 1.209]	9.7243 [-14.006, 18.368]
Sup. temporal gyrus	14.43 / 1.033 [0.886, 1.227]	7.73 / 0.553 [0.425, 0.631]	6.70 / 0.480 [0.423, 0.637]	14.1911 [-23.270, 21.879]
Transverse temporal gyrus	3.33 / 0.238 [0.183, 0.301]	1.75 / 0.125 [0.080, 0.148]	1.58 / 0.113 [0.092, 0.165]	9.8346 [-44.954, 18.793]
Temporal pole	18.49 / 1.324 [1.039, 1.471]	9.51 / 0.681 [0.509, 0.753]	8.98 / 0.643 [0.509, 0.733]	5.7233 [-12.176, 17.146]
Parietal lobe	115.45 / 8.267 [7.619, 8.850]	58.13 / 4.162 [3.759, 4.443]	57.32 / 4.104 [3.811, 4.466]	1.4081 [-6.829, 5.474]
Angular gyrus	24.69 / 1.768 [1.260, 1.866]	13.70 / 0.981 [0.658, 1.014]	10.98 / 0.786 [0.539, 0.911]	22.0350 [-9.761, 39.897]
Postcentral gyrus	23.43 / 1.678 [1.457, 1.868]	11.52 / 0.825 [0.682, 0.911]	11.92 / 0.853 [0.739, 0.997]	-3.4261 [-23.569, 7.045]
Postcentral gyrus medial segment	2.68 / 0.192 [0.108, 0.204]	1.47 / 0.105 [0.050, 0.113]	1.21 / 0.087 [0.049, 0.104]	19.2812 [-39.568, 51.098]
Precuneus	23.77 / 1.702 [1.454, 1.890]	12.20 / 0.873 [0.725, 0.965]	11.58 / 0.829 [0.710, 0.956]	5.1978 [-10.816, 13.887]
Sup. parietal lobule	22.80 / 1.632 [1.408, 1.942]	11.05 / 0.791 [0.681, 0.988]	11.74 / 0.841 [0.679, 0.993]	-6.0582 [-18.171, 18.553]
Supramarginal gyrus	18.08 / 1.294 [1.089, 1.544]	8.19 / 0.587 [0.501, 0.803]	9.88 / 0.708 [0.529, 0.806]	-18.7140 [-28.370, 24.373]

Occipital lobe	97.32 / 6.969 [5.650, 6.884]	49.94 / 3.576 [2.849, 3.531]	47.38 / 3.392 [2.729, 3.411]	5.2692 [-5.092, 11.835]
Calcarine cortex	9.62 / 0.689 [0.433, 0.715]	4.80 / 0.344 [0.216, 0.364]	4.83 / 0.346 [0.206, 0.363]	-0.5721 [-15.690, 21.753]
Cuneus	10.59 / 0.758 [0.605, 0.887]	5.34 / 0.382 [0.295, 0.465]	5.25 / 0.376 [0.289, 0.446]	1.6751 [-21.557, 25.105]
Lingual gyrus	24.48 / 1.753 [1.142, 1.582]	12.81 / 0.917 [0.556, 0.816]	11.67 / 0.836 [0.549, 0.803]	9.2590 [-17.489, 21.836]
Occipital fusiform gyrus	7.03 / 0.503 [0.464, 0.750]	2.96 / 0.212 [0.204, 0.384]	4.07 / 0.292 [0.224, 0.419]	-31.6797 [-50.448, 29.445]
Inf. occipital gyrus	15.73 / 1.126 [0.906, 1.336]	8.17 / 0.585 [0.435, 0.702]	7.56 / 0.541 [0.417, 0.684]	7.7690 [-24.765, 32.784]
Middle occipital gyrus	13.94 / 0.998 [0.657, 0.985]	7.58 / 0.543 [0.316, 0.523]	6.36 / 0.455 [0.293, 0.508]	17.5134 [-25.746, 38.211]
Sup. occipital gyrus	7.80 / 0.558 [0.495, 0.805]	4.16 / 0.298 [0.259, 0.440]	3.64 / 0.261 [0.212, 0.393]	13.3333 [-13.416, 47.429]
Occipital pole	8.13 / 0.582 [0.299, 0.529]	4.13 / 0.296 [0.142, 0.276]	4.00 / 0.286 [0.138, 0.272]	3.2349 [-32.514, 37.588]
Limbic cortex	42.61 / 3.051 [2.784, 3.333]	21.37 / 1.530 [1.329, 1.662]	21.24 / 1.521 [1.394, 1.737]	0.6030 [-17.691, 8.878]
Entorhinal area	5.58 / 0.400 [0.260, 0.411]	2.97 / 0.213 [0.127, 0.216]	2.61 / 0.187 [0.126, 0.210]	12.9094 [-22.441, 27.678]
Anterior cingulate gyrus	10.61 / 0.759 [0.590, 0.902]	5.13 / 0.367 [0.253, 0.457]	5.47 / 0.392 [0.299, 0.497]	-6.4600 [-46.760, 20.294]
Middle cingulate gyrus	10.00 / 0.716 [0.655, 0.873]	5.14 / 0.368 [0.319, 0.458]	4.85 / 0.347 [0.304, 0.452]	5.8140 [-20.689, 27.877]
Posterior cingulate gyrus	10.58 / 0.757 [0.636, 0.812]	5.18 / 0.371 [0.302, 0.416]	5.40 / 0.386 [0.316, 0.414]	-4.0633 [-17.479, 13.690]
Parahippocampal gyrus	5.85 / 0.419 [0.415, 0.575]	2.94 / 0.211 [0.192, 0.280]	2.91 / 0.208 [0.215, 0.302]	1.2026 [-26.190, 4.160]
Insular cortex	29.84 / 2.137 [1.927, 2.330]	14.22 / 1.018 [0.931, 1.148]	15.62 / 1.119 [0.978, 1.200]	-9.3989 [-12.853, 2.735]
Anterior insula	8.66 / 0.620 [0.539, 0.703]	4.21 / 0.301 [0.263, 0.350]	4.46 / 0.319 [0.271, 0.356]	-5.7546 [-12.148, 7.402]
Posterior insula	4.42 / 0.316 [0.285, 0.390]	2.23 / 0.159 [0.140, 0.199]	2.19 / 0.157 [0.141, 0.198]	1.5584 [-15.260, 16.112]
Central operculum	7.85 / 0.562 [0.478, 0.644]	3.91 / 0.280 [0.226, 0.325]	3.94 / 0.282 [0.237, 0.337]	-0.7602 [-23.884, 14.605]
Frontal operculum	3.72 / 0.266 [0.199, 0.334]	1.59 / 0.114 [0.089, 0.172]	2.13 / 0.152 [0.096, 0.176]	-28.6654 [-40.866, 31.087]
Parietal operculum	5.20 / 0.372 [0.274, 0.430]	2.29 / 0.164 [0.114, 0.205]	2.91 / 0.208 [0.144, 0.238]	-24.0400 [-48.206, 10.379]

CSF	Total (cm^3 / %)	Right (cm^3 / %)	Left (cm^3 / %)	Asymmetry (%)
Inf. lateral ventricle	1.87 / 0.134 [0.041, 0.157]	1.22 / 0.087 [0.021, 0.085]	0.65 / 0.046 [0.017, 0.079]	61.4818 [-39.346, 72.228]
Lateral ventricle	23.66 / 1.694 [1.136, 4.054]	12.16 / 0.871 [0.530, 1.988]	11.50 / 0.823 [0.583, 2.146]	5.5595 [-39.327, 22.782]
3rd ventricle	0.95 / 0.068 [0.054, 0.168]			
4th ventricle	1.08 / 0.077 [0.074, 0.184]			
External CSF	165.44 / 11.847 [10.734, 17.072]			

Cerebellar vermis	Total (cm^3 / %)
Lobules I-V	5.05 / 0.362 [0.321, 0.465]
Lobules VI-VII	2.19 / 0.157 [0.146, 0.226]
Lobules VIII-X	2.20 / 0.157 [0.178, 0.263]