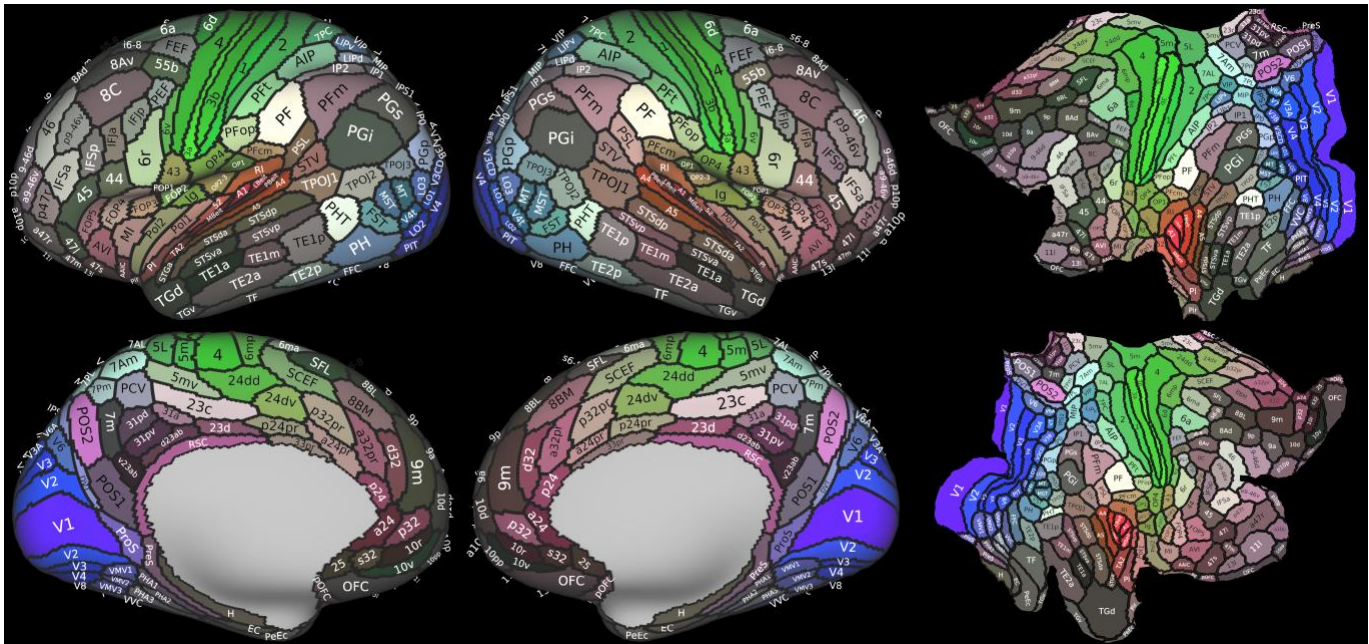


## AABC Release 1 Appendix 2: 3T MRI Imaging Derived Phenotypes (IDPs)

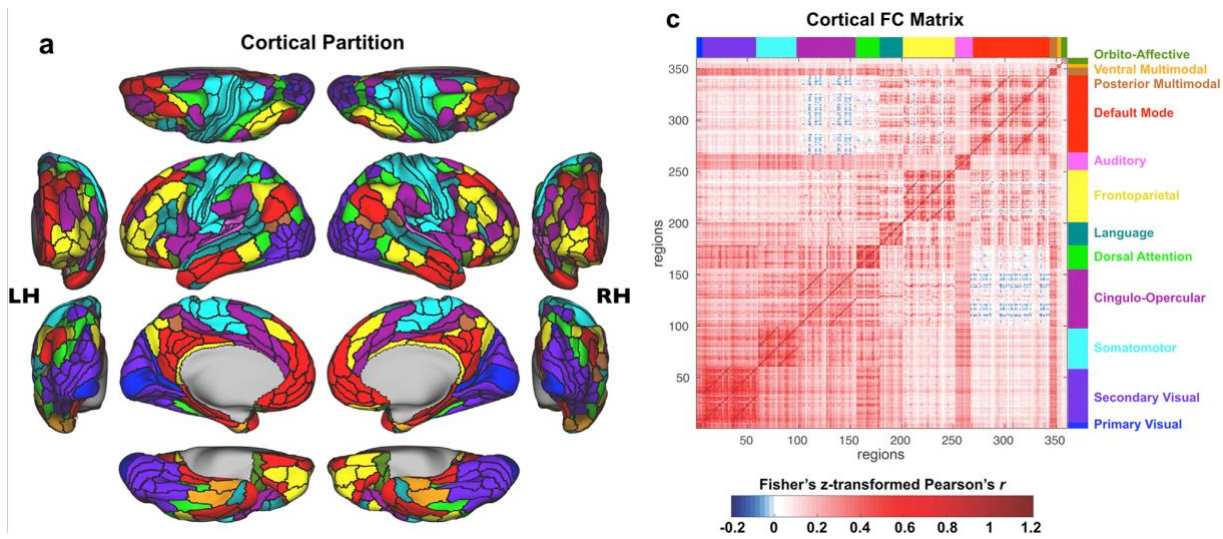
### Release 1: 10/2025

Imaging derived phenotypes (IDPs) for imaging visit sessions collected during the course of the Lifespan HCP-Aging Project (HCA) and Aging Adult Brain Connectome (AABC) studies and processed through the HCP pipelines [1] are available as project level Files (CSV format) and as an imaging package (CIFTI format) on the [AABC Release 1 project page](#) (Files tab). Cortical IDPs are generated using the multi-modal parcellation of Human Cerebral Cortex described by Glasser et al 2016 [2]. HCP IDP Pipelines will be released in 2026. More information about the areas in this atlas can be found in the Glasser et al. 2016 supplement which is available in the AABC Release 1 project level files (AreaNamesAndIndices - NIHMS68870-supplement-Neuroanatomical\_Supplementary\_Results.pdf), and is visualized in figure 1, below. Subcortical IDPs are produced with FreeSurfer's aseg pipeline [3].

**Figure 1.** Cortical areas from the HCP's multi-modal cortical parcellation v1.0 <https://balsa.wustl.edu/78X3>



**Figure 2.** Cortical Functional Networks from Ji et al., 2019 Neuroimage [4] <https://balsa.wustl.edu/xxqL>



### IDPs:

There are two versions of the IDPs: the .csv versions available as a project level zip archive and CIFTI versions (available as the CIFTI Multi-modal IDPs Recommended imaging package). Both the .csv file name and the CIFTI file name within the "CinaB" native HCP file structure (\*.pscalar and \*.pconn) are provided below.

File name (in AABC Release 1 Files tab on BALSAs)	Description
AABC_Release1_Appendix1_Appendix1_FileNames&DirectoryStructure.pdf	Descriptions, File names, and Directory Structure of available imaging data packages on BALSAs, including CIFTI IDPs.
AABC_Release1_wb_view_Spec.zip	Instructions and template data for visualizing the layers of output produced by the HCP pipelines, including IDPs, in Connectome Workbench.
AABC_Release1_IDP_info.zip Includes: AABC_Release1_Appendix_2_ImagingDerivedPhenotypes.pdf (this document) AreaNamesAndIndices - NIHMS68870-supplement-Neuroanatomical_Supplementary_Results.pdf AreaNamesAndIndicesAndNetworks.csv	Imaging Derived Phenotype (IDP) processing information, file archive descriptions and references.
AreaNamesAndIndices - NIHMS68870-supplement-Neuroanatomical_Supplementary_Results.pdf	Neuroanatomical Supplementary Results for <i>A Multi-modal Parcellation of Human Cerebral Cortex</i> (Nature 2016): Description/properties/references of

	regions in the HCP_MMP v1.0 Atlas from the publication's supplement [2].
AreaNamesAndIndicesAndNetworks.csv	Contains (1) the names of different regions of interest (ROIs) in both brain hemispheres as rows, (2) real index, spreadsheet index, and spreadsheet columns for each brain area to facilitate cross-referencing between this table and the IDP spreadsheets described below, (3) Ji Network Label [4], (4) cortical networks that the brain areas are associated with, where "1.0" indicates overlap and "0.0" indicates no overlap.
<b>AABC_Release1_Structural_IDPs.zip</b> Includes: asegstats.csv Cortical_Areal_Myelin.csv Cortical_Areal_Myelin_Covariates.csv Cortical_Areal_Myelin_STD.csv Cortical_Areal_Surface_Areas.csv Cortical_Areal_Thicknesses.csv Cortical_Areal_Thicknesses_STD.csv Cortical_Areal_Volumes.csv	CSV formatted cortical areal surface areas, thicknesses, volumes, and myelin map values within a given area of the HCP_MMP v1.0 atlas for each subject, plus myelin covariates and FreeSurfer subcortical volumes.
asegstats.csv	FreeSurfer subcortical structure volumes in subjects' physical space for structural imaging sessions processed through the MSMAll pipeline for each subject.
Cortical_Areal_Myelin.csv \${Subject}/MNINonLinear/fsaverage_LR32k/\${Subject}.MyelinMap_PseudoCorr_MSMAll_210V_MPM.32k_fs_LR.pscalar.nii	Mean T1w/T2w cortical myelin map values within a given area of the HCP_MMP v1.0 atlas for each subject after correction for transmit field effects.
Cortical_Areal_Myelin_Covariates.csv	Recommended covariates for myelin map analyses (correct for global effects on the mean).
Cortical_Areal_Myelin_STD.csv \${Subject}/MNINonLinear/fsaverage_LR32k/\${Subject}.MyelinMap_PseudoCorr_MSMAll_210V_MPM_std.32k_fs_LR.pscalar.nii	Standard deviation of T1w/T2w Cortical myelin map values within a given area of the HCP_MMP v1.0 atlas for each

	subject after correction for transmit field effects.
<p>Cortical_Areal_Surface_Areas.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{fsaverage\_LR32k}/\{\text{Subject}\}.\text{midthickness\_MSMAll\_va\_210V\_MPM.32k\_fs\_LR}.\text{pscalar.nii}</math></p>	Cortical surface area (mm <sup>2</sup> ) of an area of the HCP_MMP v1.0 atlas for each subject in the subjects' physical space.
<p>Cortical_Areal_Thicknesses.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{fsaverage\_LR32k}/\{\text{Subject}\}.\text{thickness\_MSMAll\_210V\_MPM.32k\_fs\_LR}.\text{pscalar.nii}</math></p>	Mean cortical thickness (mm) of an area of the HCP_MMP v1.0 atlas for each subject in the subjects' physical space.
<p>Cortical_Areal_Thicknesses_STD.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{fsaverage\_LR32k}/\{\text{Subject}\}.\text{thickness\_MSMAll\_210V\_MPM\_std.32k\_fs\_LR}.\text{pscalar.nii}</math></p>	Standard deviation of thickness (mm) of an area of the HCP_MMP v1.0 atlas for each subject in the subjects' physical space.
<p>Cortical_Areal_Volumes.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{fsaverage\_LR32k}/\{\text{Subject}\}.\text{CorticalVolume\_MSMAll\_210V\_MPM.32k\_fs\_LR}.\text{pscalar.nii}</math></p>	Cortical volumes (mm <sup>3</sup> ) within a given area of the HCP_MMP v1.0 atlas for each subject in the subjects' physical space.
<p><b>AABC_Release1_PVEc_AS�.zip</b></p> <p>Includes:</p> <ul style="list-style-type: none"> <li>PVEc_AS�_ATT.csv</li> <li>PVEc_AS�_ATT_STD.csv</li> <li>PVEc_AS�_CBF.csv</li> <li>PVEc_AS�_CBF_STD.csv</li> </ul>	CSV formatted mean and standard deviation of partial volume-corrected arterial spin labelling (ASL) IDPs for arterial transit time and cerebral blood flow within a given area of the HCP_MMP v1.0 atlas for each subject.
<p>PVEc_AS�_ATT.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{ASL}/\text{pvcorr\_arrival\_Atlas\_MSMAll\_210V\_MPM\_with\_Atlas\_ROIs}.\text{pscalar.nii}</math></p>	Mean partial volume corrected arterial spin labelling for arterial transit time within a given area of the HCP_MMP v1.0 atlas for each subject.
<p>PVEc_AS�_ATT_STD.csv</p> <p><math>\{\text{Subject}\}/\text{MNINonLinear}/\text{ASL}/\text{pvcorr\_arrival\_Atlas\_MSMAll\_210V\_MPM\_with\_Atlas\_ROIs\_std}.\text{pscalar.nii}</math></p>	Standard deviation of partial volume corrected arterial spin labelling for arterial transit time within a given area of the HCP_MMP v1.0 atlas for each subject.
<p>PVEc_AS�_CBF.csv</p>	Mean partial volume corrected arterial spin labelling for cerebral blood flow

<p><code>\${Subject}/MNINonLinear/ASL/pvcorr_perfusion_calib_Atlas_MS MAll_210V_MPM_with_Atlas_ROIs.pscalar.nii</code></p>	<p>within a given area of the HCP_MMP v1.0 atlas for each subject.</p>
<p>PVEc_ASL_CBF_STD.csv</p> <p><code>\${Subject}/MNINonLinear/ASL/pvcorr_perfusion_calib_Atlas_MS MAll_210V_MPM_with_Atlas_ROIs_std.pscalar.nii</code></p>	<p>Standard deviation of partial volume corrected arterial spin labelling for cerebral blood flow within a given area of the HCP_MMP v1.0 atlas for each subject.</p>
<p><a href="#">AABC_Release1_rfMRI_REST_fmRIAmplitudes.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_CARIT_PA_fmRIAmplitudes.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_FACENAME_PA_fmRIAmplitudes.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_VISMOTOR_PA_fmRIAmplitudes.zip</a></p> <p>Includes:</p> <ul style="list-style-type: none"> <li><code>{fMRIName}_FullAmplitudes.csv</code></li> <li><code>{fMRIName}_NoiseAmplitudes.csv</code></li> <li><code>{fMRIName}_PartialAmplitudes.csv</code></li> </ul> <p><code>\${Subject}/MNINonLinear/Results/\${fMRIName}/\${fMRIName}_ Atlas_MSMAIi_hp0_clean_rclean_tclean_210V_MPM_with_Atlas s_ROIs_amps.pscalar.nii</code></p>	<p>Full, partial, and unstructured noise amplitudes of the time series within a given cortical area of the HCP_MMP v1.0 atlas or FreeSurfer subcortical structure for each subject. Full amplitudes represent all BOLD fMRI variance in the parcel whereas partial amplitudes represent only the unique BOLD fMRI variance in that parcel (a measure of within-parcel local connectivity). Unstructured noise has been removed from both the full and partial amplitudes and is reported separately. rfMRI_REST is the concatenated resting state timeseries and tfMRI_CARIT, tfMRI_FACENAME, and tfMRI_VISMOTOR are the CARIT, FACENAME, and VISMOTOR task timeseries respectively [5].</p>
<p><a href="#">AABC_Release1_rfMRI_REST_FullCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_CARIT_PA_FullCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_FACENAME_PA_FullCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_VISMOTOR_PA_FullCovarianceConnectivity.zip</a></p> <p><code>\${Subject}/MNINonLinear/Results/\${fMRIName}/\${fMRIName}_ Atlas_MSMAIi_hp0_clean_rclean_tclean_210V_MPM_with_Atlas s_ROIs_cv.pconn.nii</code></p>	<p>Full Covariance Functional Connectivity of concatenated resting state (or TASK) time series between a named cortical area or subcortical structure and all other parcels of the HCP_MMP v1.0 atlas and FreeSurfer structures for each subject (one file for each parcel). Covariance includes only the strength of connection between the pair of areas (and not, for example, the effects of unstructured noise that happens to be in the parcels) and as a result is <b>recommended</b>. Full covariance includes both unique covariance between the pair of parcels and covariance shared with other third-party parcels and thus</p>

	<p>reflects both “direct” and “indirect” connectivity between them. Structured artifacts from head motion and physiology have already been removed and no further denoising is necessary. Images were intensity normalized so that covariances across the brain area are all biologically comparable. rfMRI_REST is the concatenated resting state timeseries and tfMRI_CARIT, tfMRI_FACENAME, and tfMRI_VISMOTOR are the CARIT, FACENAME, and VISMOTOR task timeseries respectively [5].</p>
<p><a href="#">AABC_Release1_rfMRI_REST_PartialCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_CARIT_PA_PartialCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_FACENAME_PA_PartialCovarianceConnectivity.zip</a></p> <p><a href="#">AABC_Release1_tfMRI_VISMOTOR_PA_PartialCovarianceConnectivity.zip</a></p> <p><code>\${Subject}/MNINonLinear/Results/\${fMRIName}/\${fMRIName}_Atlas_MSMA11_hp0_clean_rclean_tclean_210V_MPM_with_Atlas_ROIs_pcv.pconn.nii</code></p>	<p>Partial Covariance Functional Connectivity of concatenated resting state (or TASK) time series between a named cortical area or subcortical structure and all other parcels of the HCP_MMP v1.0 atlas and FreeSurfer structures for each subject (one file for each parcel). Covariance includes only the strength of connection between the pair of areas (and not, for example, the effects of unstructured noise that happens to be in the parcels) and as a result is <b>recommended</b>. Partial covariance includes only the unique covariance between the pair of parcels and likely reflects the “direct” connectivity between them. Structured artifacts from head motion and physiology have already been removed and no further denoising is necessary. Images were intensity normalized so that covariances across the brain areas are all biologically comparable. rfMRI_REST is the concatenated resting state timeseries and tfMRI_CARIT, tfMRI_FACENAME, and tfMRI_VISMOTOR are the CARIT, FACENAME, and VISMOTOR task timeseries respectively [5].</p>

<p><b>AABC_Release1_rfMRI_REST_FullCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_CARIT_PA_FullCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_FACENAME_PA_FullCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_VISMOTOR_PA_FullCorrelationConnectivity.zip</b></p> <p><code>\${Subject}/MNINonLinear/Results/\${fMRIName}/\${fMRIName}_Atlas_MSMAI_hp0_clean_rclean_tclean_210V_MPM_with_Atlas_ROIs_rz.pconn.nii</code></p>	<p>Full Correlation of concatenated resting state (or TASK) time series between a named cortical area or subcortical structure and all other parcels of the HCP_MMP v1.0 atlas and FreeSurfer structures for each subject (one file for each parcel). Correlation includes both the signal of interest and the effects of unstructured noise, which has a non-uniform distribution across the brain due to the head coil sensitivity profile (makes connectivity appear weaker in the center of the brain) and as a result is <b>not recommended</b>. Full correlation includes both unique correlation between the pair of parcels and correlation shared with other third-party parcels. Structured artifacts from head motion and physiology have already been removed and no further denoising is necessary.</p> <p>rfMRI_REST is the concatenated resting state timeseries and tfMRI_CARIT, tfMRI_FACENAME, and tfMRI_VISMOTOR are the CARIT, FACENAME, and VISMOTOR task timeseries respectively [5].</p>
<p><b>AABC_Release1_rfMRI_REST_PartialCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_CARIT_PA_PartialCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_FACENAME_PA_PartialCorrelationConnectivity.zip</b></p> <p><b>AABC_Release1_tfMRI_VISMOTOR_PA_PartialCorrelationConnectivity.zip</b></p> <p><code>\${Subject}/MNINonLinear/Results/\${fMRIName}/\${fMRIName}_Atlas_MSMAI_hp0_clean_rclean_tclean_210V_MPM_with_Atlas_ROIs_prz.pconn.nii</code></p>	<p>Partial Correlation of concatenated resting state (or TASK) time series between a named cortical area or subcortical structure and all other parcels of the HCP_MMP v1.0 atlas and FreeSurfer structures for each subject (one file for each parcel). Correlation includes both the signal of interest and the effects of unstructured noise, which has a non-uniform distribution across the brain due to the head coil sensitivity profile (makes connectivity appear weaker in the center of the brain) and as a result is <b>not recommended</b>. Partial correlation includes only unique correlation between the pair of parcels. Structured artifacts from head motion</p>

and physiology have already been removed and no further denoising is necessary.  
 rfMRI\_REST is the concatenated resting state timeseries and tfMRI\_CARIT, tfMRI\_FACENAME, and tfMRI\_VISMOTOR are the CARIT, FACENAME, and VISMOTOR task timeseries respectively [5].

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