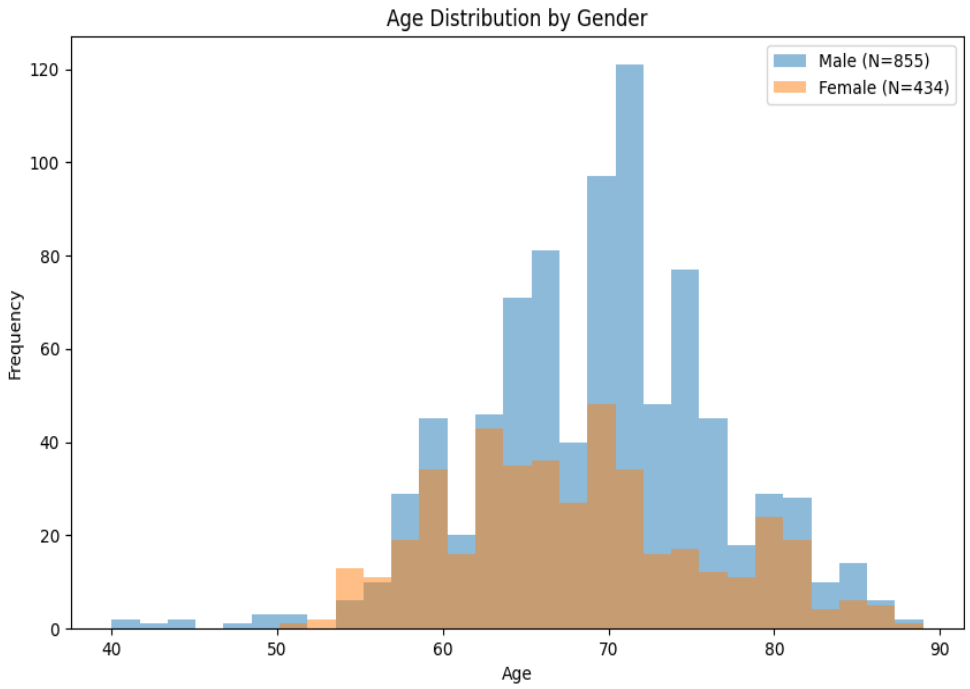
GAMLSS Age Curves Report

This is the output report for fitted GAMLSS models ran on: 2025-01-26 10:19:18.297361

Dataset filename: ondri_beam_biomarkers_cleaned.xlsx
Run time: 0 h 1 min 59 s

This analysis uses Generalized Additive Models for Location, Scale and Shape (GAMLSS) in R to construct normative age curves for FLAIR biomarkers. The data is stratified by sex and tissue type, and models are optimized to characterize the relationship between age and each biomarker. The models account for changes in both the mean trend and the spread of values across age. Centile curves (3rd, 15th, 50th, 85th, and 97th percentiles) are generated to show the expected distribution of values at each age.



Age distribution between genders in the dataset analyzed for age curves.

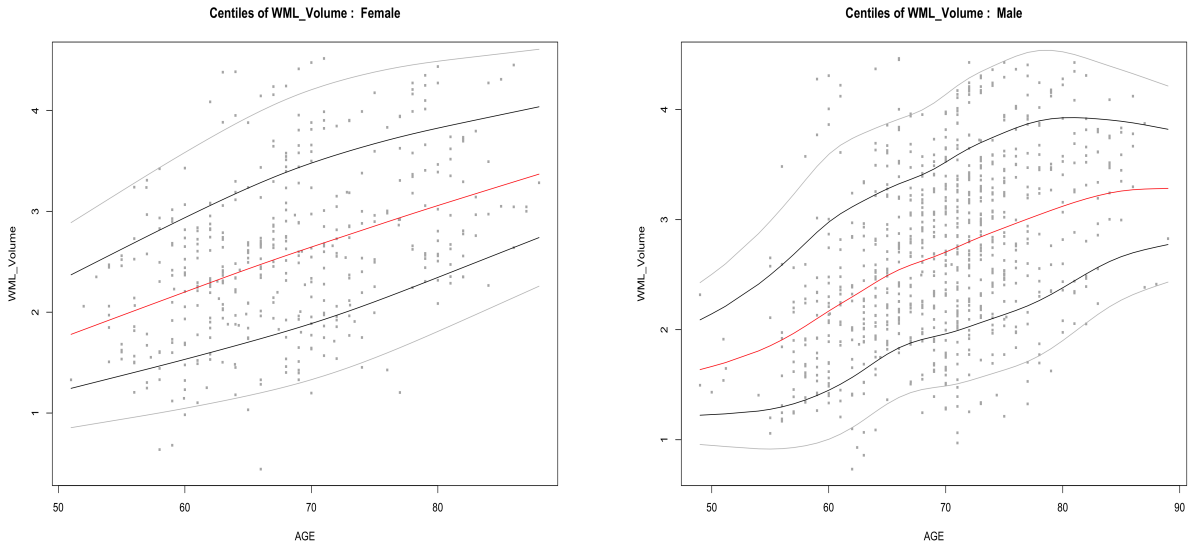
Modelling Results

Age Curves for Tissue Type: WML

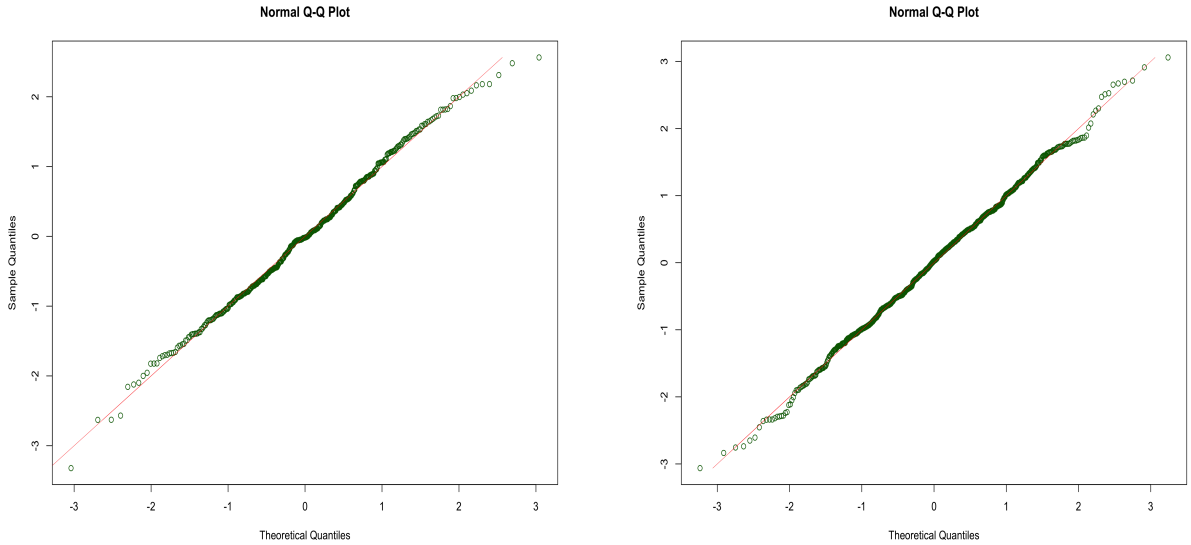
Biomarker: WML_Volume

WML_Volume Optimized Model Parameters by Sex

Parameter	Value (Female)	Value (Male)
Best model family	BCCG	BCPE
AIC	925.06	1805.09
(Intercept)	-0.450200	-0.761378
cs(AGE, lambda = 5000, df = 4)	N/A	0.049256
pb(AGE, lambda = 6000, df = 1)	0.044145	N/A
mu	3.017744857888852	3.120953596558164
sigma	0.24030880641784308	0.22999232186527413
nu	N/A	N/A
tau	N/A	N/A



Normative Volume age curves for female (left) and male (right) in WML



Residuals of female (left) and male (right) Volume age curves in WML