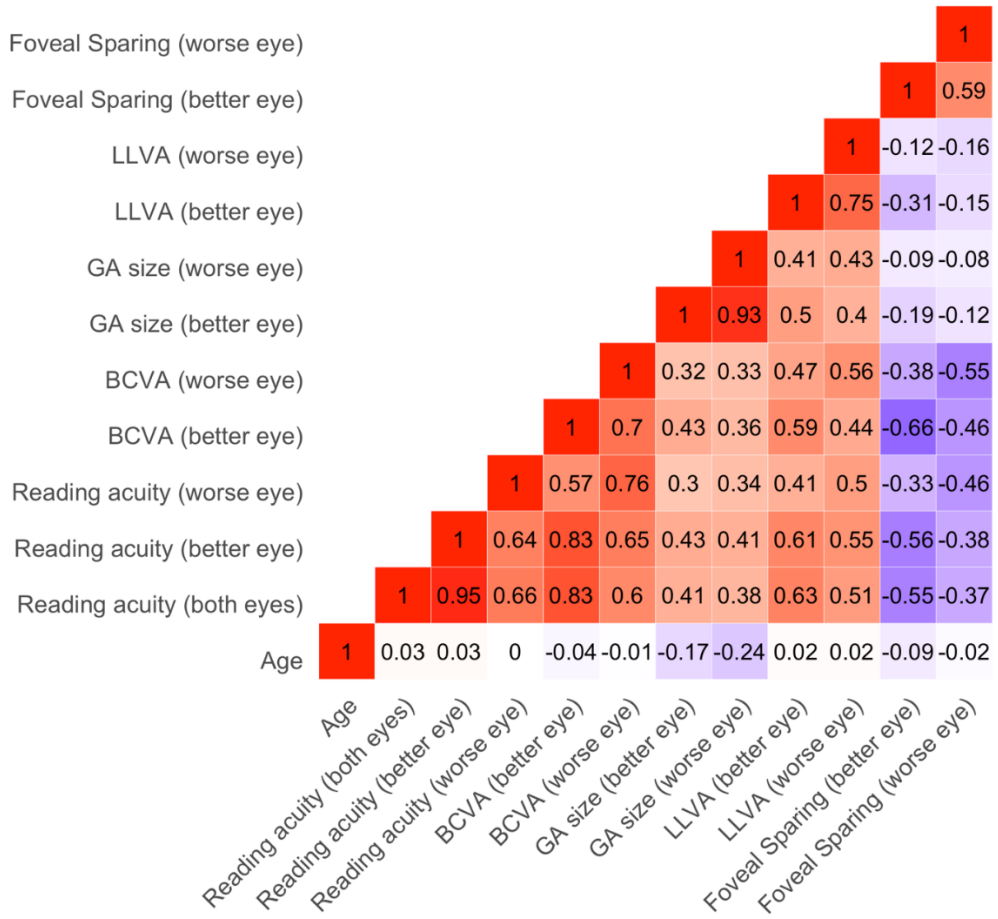
Supplement to: Determinants of quality of life in geographic atrophy secondary to age-related macular degeneration

Supplementary Figure S1. Correlation among candidate features

The heatmap shows the Spearman correlation among all of the candidate features. The correlation is color-labelled (red – positive correlation; no color – no correlation; blue – negative correlation) and provided as number (Spearman's ρ). Note that strong correlations in absolute value (in particular when ρ > 0.8) indicate multicollinearity.



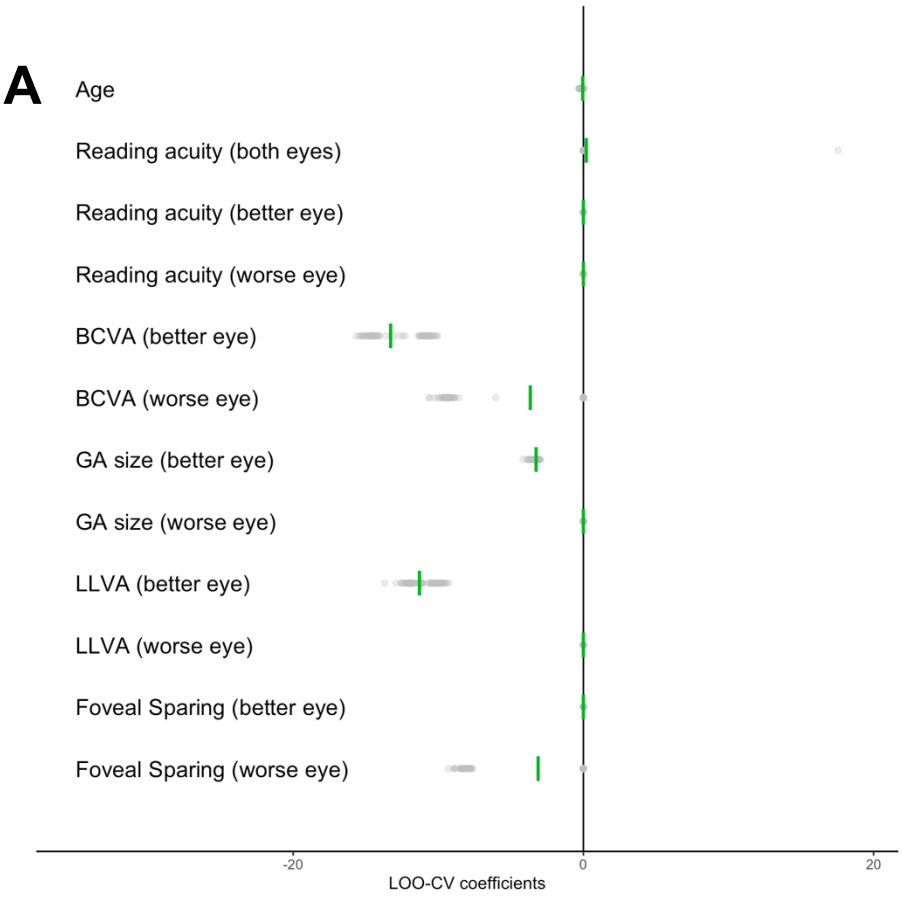
Supplementary Table S1. Cross-sectional analysis of determinants of vision-related quality of life composite score without regularization

The table shows the results of the "conventional" cross-sectional multivariable regression analysis fitted without regularization to the complete dataset. Variables were selected through stepwise forward section based on Akaike information criterion (AIC). Note that often the R^2 / R^2-adjusted is too optimistic in comparison to the cross-validated R^2.

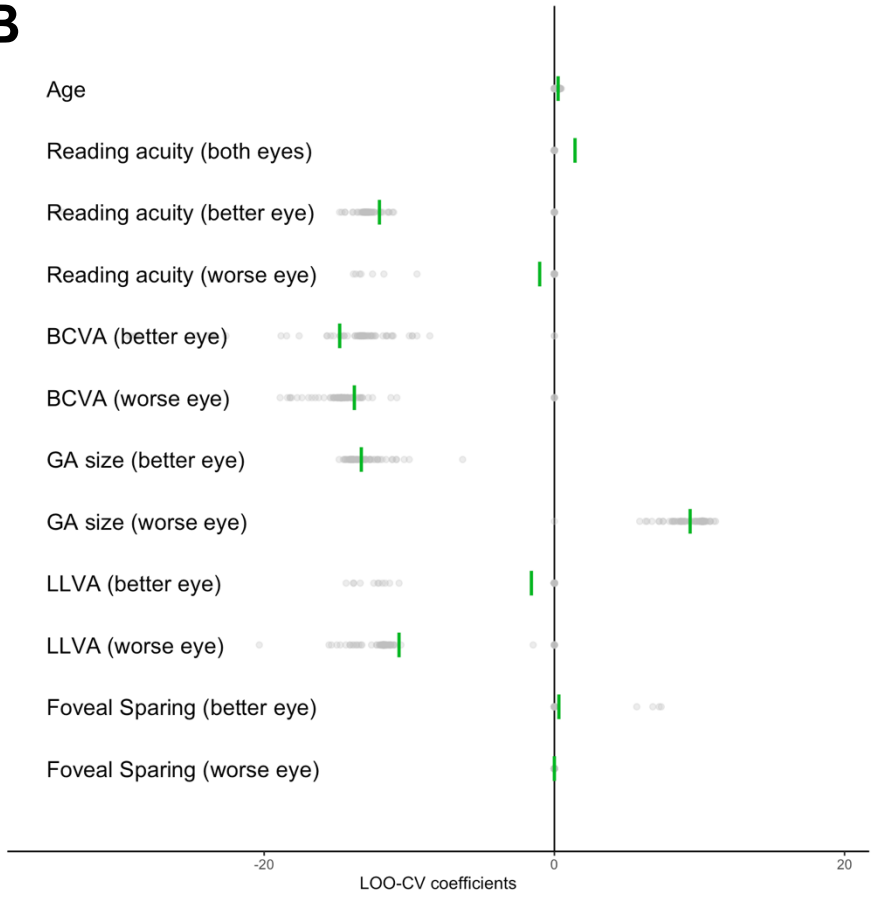
		Composite Score	
Predictors	*Estimates*	*CI*	*p*
(Intercept)	92.27	84.85 – 99.69	**<0.001**
BCVA (better eye)	-14.61	-22.79 – -6.44	**0.001**
LLVA (better eye)	-11.93	-20.00 – -3.87	**0.004**
GA size (better eye)	-3.19	-5.74 – -0.65	**0.015**
Observations	87		
R^2 / R^2 adjusted	0.460 / 0.440		

Supplementary Figure 2. Cross-validation of the cross-sectional model without regularization

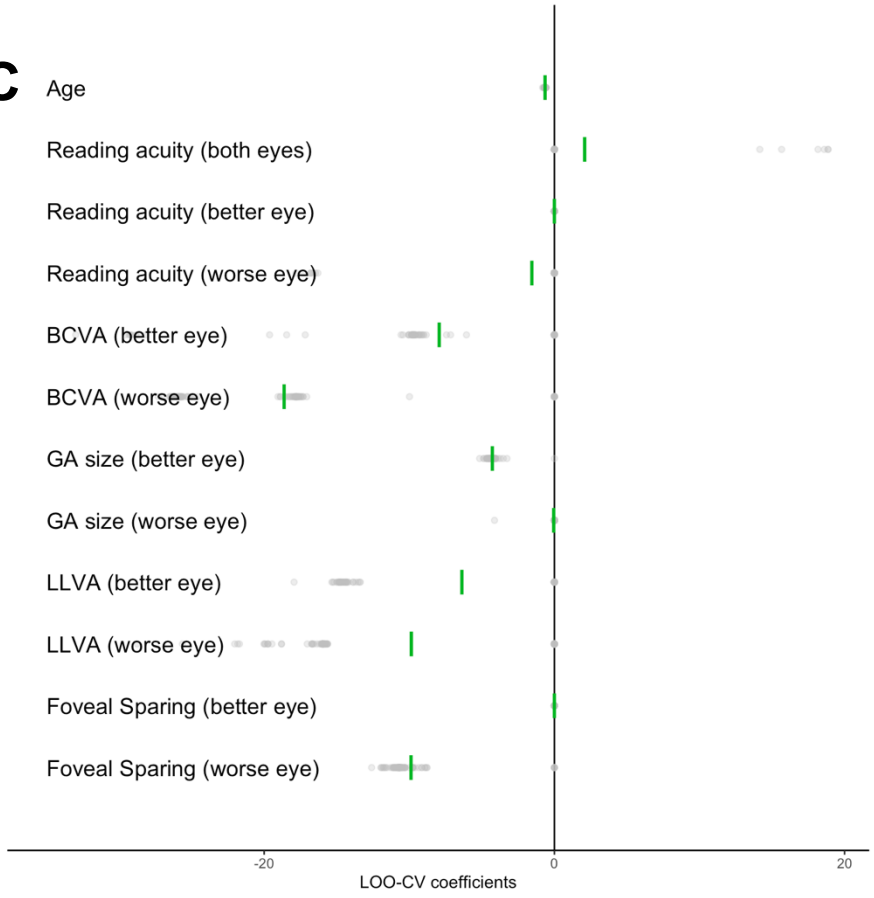
Since multicollinearity can lead to substantial instability in model coefficients (without regularization), we cross-validated the multivariate regression analysis (including variable selection through stepwise forward section based on Akaike information criterion [AIC]). Panel A, B and C show a dot plot of regression coefficients derived for the composite score (A), the near (B) and distant (C) vision subscores. Please note, the points were plotted semi-transparent to avoid over-plotting. The green vertical lines indicate the mean coefficient. In comparison to the regularized regression (Figure 3), instability in model coefficients and variable selection due to multicollinearity was observable (e.g., BCVA [better eye] and Foveal sparing [worse eye] in panel A).



B


Age
Reading acuity (both eyes)
Reading acuity (better eye)
Reading acuity (worse eye)
BCVA (better eye)
BCVA (worse eye)
GA size (better eye)
GA size (worse eye)
LLVA (better eye)
LLVA (worse eye)
Foveal Sparing (better eye)
Foveal Sparing (worse eye)
-20
0
20
LOO-CV coefficients

C


Age
Reading acuity (both eyes)
Reading acuity (better eye)
Reading acuity (worse eye)
BCVA (better eye)
BCVA (worse eye)
GA size (better eye)
GA size (worse eye)
LLVA (better eye)
LLVA (worse eye)
Foveal Sparing (better eye)
Foveal Sparing (worse eye)
-20
0
20
LOO-CV coefficients

Supplementary Table S2. Longitudinal analysis of determinants of vision-related quality of life composite score without regularization

The table shows the results of the "conventional" longitudinal mixed-effects model regression analysis fitted without regularization to the complete dataset. Patient were considered as random effect. Variables were selected through stepwise forward section based on conditional Akaike information criterion (cAIC). Note that often marginal R^2 is too optimistic in comparison to the cross-validated R^2.

		Composite Score	
Predictors	*Estimates*	*CI*	*p*
(Intercept)	111.43	79.69 – 143.17	**<0.001**
GA size (better eye)	-8.45	-13.60 – -3.30	**0.001**
Foveal Sparing (better eye)	0.78	-4.13 – 5.69	0.757
BCVA (worse eye)	2.33	-3.23 – 7.89	0.412
BCVA (better eye)	-14.46	-20.48 – -8.44	**<0.001**
LLVA (worse eye)	-7.39	-11.35 – -3.43	**<0.001**
Reading acuity (worse eye)	-7.14	-13.67 – -0.62	**0.032**
GA size (worse eye)	4.32	-1.34 – 9.97	0.135
Foveal Sparing (worse eye)	-6.03	-12.08 – 0.02	0.051
Age	-0.18	-0.55 – 0.19	0.340
Observations	220		
Marginal R^2/ Conditional R^2	0.436 / 0.874		