NAG Library Chapter Contents

g02 – Correlation and Regression Analysis

g02 Chapter Introduction

Function Name	Mark of Introduction	Purpose
g02aac	9	nag_nearest_correlation Computes the nearest correlation matrix to a real square matrix, using the method of Qi and Sun
g02abc	23	nag_nearest_correlation_bounded Computes the nearest correlation matrix to a real square matrix, augmented nag_nearest_correlation (g02aac) to incorporate weights and bounds
g02aec	23	nag_nearest_correlation_k_factor Computes the nearest correlation matrix with k-factor structure to a real square matrix
g02ajc	24	nag_nearest_correlation_h_weight Computes the nearest correlation matrix to a real square matrix, using element-wise weighting
g02anc	25	nag_nearest_correlation_shrinking Computes a correlation matrix from an approximate matrix with fixed submatrix
g02brc	3	nag_ken_spe_corr_coeff Kendall and/or Spearman non-parametric rank correlation coefficients, allows variables and observations to be selectively disregarded
g02btc	7	nag_sum_sqs_update Update a weighted sum of squares matrix with a new observation
g02buc	7	nag_sum_sqs Computes a weighted sum of squares matrix
g02bwc	7	nag_cov_to_corr Computes a correlation matrix from a sum of squares matrix
g02bxc	3	nag_corr_cov Product-moment correlation, unweighted/weighted correlation and covariance matrix, allows variables to be disregarded
g02byc	6	nag_partial_corr Computes partial correlation/variance-covariance matrix from correlation/ variance-covariance matrix computed by nag_corr_cov (g02bxc)
g02bzc	24	nag_sum_sqs_combine Combines two sums of squares matrices, for use after nag_sum_sqs (g02buc)
g02cac	3	nag_simple_linear_regression Simple linear regression with or without a constant term, data may be weighted
g02cbc	3	nag_regress_confid_interval Simple linear regression confidence intervals for the regression line and individual points
g02dac	1	nag_regsn_mult_linear Fits a general (multiple) linear regression model
g02dcc	2	nag_regsn_mult_linear_addrem_obs Add/delete an observation to/from a general linear regression model
g02ddc	2	nag_regsn_mult_linear_upd_model Estimates of regression parameters from an updated model
g02dec	2	nag_regsn_mult_linear_add_var Add a new independent variable to a general linear regression model
g02dfc	2	nag_regsn_mult_linear_delete_var Delete an independent variable from a general linear regression model

g02dgc	1	nag_regsn_mult_linear_newyvar Fits a general linear regression model to new dependent variable
g02dkc	2	nag_regsn_mult_linear_tran_model Estimates of parameters of a general linear regression model for given constraints
g02dnc	2	nag_regsn_mult_linear_est_func Estimate of an estimable function for a general linear regression model
g02eac	7	nag_all_regsn Computes residual sums of squares for all possible linear regressions for a set of independent variables
g02ecc	7	nag_cp_stat Calculates R^2 and C_P values from residual sums of squares
g02eec	7	nag_step_regsn Fits a linear regression model by forward selection
g02efc	8	nag_full_step_regsn Stepwise linear regression
g02fac	1	nag_regsn_std_resid_influence Calculates standardized residuals and influence statistics
g02fcc	7	nag_durbin_watson_stat Computes Durbin–Watson test statistic
g02gac	4	nag_glm_normal Fits a generalized linear model with Normal errors
g02gbc	4	nag_glm_binomial Fits a generalized linear model with binomial errors
g02gcc	4	nag_glm_poisson Fits a generalized linear model with Poisson errors
g02gdc	4	nag_glm_gamma Fits a generalized linear model with gamma errors
g02gkc	4	nag_glm_tran_model Estimates and standard errors of parameters of a general linear model for given constraints
g02gnc	4	nag_glm_est_func Estimable function and the standard error of a generalized linear model
g02gpc	9	nag_glm_predict Computes a predicted value and its associated standard error based on a previously fitted generalized linear model
g02hac	4	nag_robust_m_regsn_estim Robust regression, standard M-estimates
g02hbc	7	nag_robust_m_regsn_wts Robust regression, compute weights for use with nag_robust_m_regsn_user_fn (g02hdc)
g02hdc	7	nag_robust_m_regsn_user_fn Robust regression, compute regression with user-supplied functions and weights
g02hfc	7	nag_robust_m_regsn_param_var Robust regression, variance-covariance matrix following nag_robust_m_regsn_user_fn (g02hdc)
g02hkc	4	nag_robust_corr_estim Robust estimation of a covariance matrix, Huber's weight function
g02hlc	7	nag_robust_m_corr_user_fn Calculates a robust estimation of a covariance matrix, user-supplied weight function plus derivatives
g02hmc	7	nag_robust_m_corr_user_fn_no_derr Calculates a robust estimation of a covariance matrix, user-supplied weight function
g02jac	8	nag_reml_mixed_regsn Linear mixed effects regression using Restricted Maximum Likelihood (REML)

g02jbc	8	nag_ml_mixed_regsn Linear mixed effects regression using Maximum Likelihood (ML)
g02jcc	9	nag_hier_mixed_init Hierarchical mixed effects regression, initialization function for nag_reml_hier_mixed_regsn (g02jdc) and nag_ml_hier_mixed_regsn (g02jec)
g02jdc	9	nag_reml_hier_mixed_regsn Hierarchical mixed effects regression using Restricted Maximum Likelihood (REML)
g02jec	9	nag_ml_hier_mixed_regsn Hierarchical mixed effects regression using Maximum Likelihood (ML)
g02kac	9	nag_regsn_ridge_opt Ridge regression, optimizing a ridge regression parameter
g02kbc	9	nag_regsn_ridge Ridge regression using a number of supplied ridge regression parameters
g02lac	9	nag_pls_orth_scores_svd Partial least squares (PLS) regression using singular value decomposition
g02lbc	9	nag_pls_orth_scores_wold Partial least squares (PLS) regression using Wold's iterative method
g02lcc	9	nag_pls_orth_scores_fit PLS parameter estimates following partial least squares regression by nag_pls_orth_scores_svd (g02lac) or nag_pls_orth_scores_wold (g02lbc)
g02ldc	9	nag_pls_orth_scores_pred PLS predictions based on parameter estimates from nag_pls_orth_scores_fit (g02lcc)
g02mac	25	nag_lars Least angle regression (LARS), least absolute shrinkage and selection operator (LASSO) and forward stagewise regression
g02mbc	25	nag_lars_xtx Least Angle Regression (LARS), Least Absolute Shrinkage and Selection Operator (LASSO) and forward stagewise regression using the cross-products matrix
g02mcc	25	nag_lars_param Additional parameter calculate following Least Angle Regression (LARS), Least Absolute Shrinkage and Selection Operator (LASSO) or forward stagewise regression
g02qfc	23	nag_regsn_quant_linear_iid Linear quantile regression, simple interface, independent, identically distributed (IID) errors
g02qgc	23	nag_regsn_quant_linear Linear quantile regression, comprehensive interface
g02zkc	23	nag_g02_opt_set Option setting function for nag_regsn_quant_linear (g02qgc)
g02zlc	23	nag_g02_opt_get Option getting function for nag_regsn_quant_linear (g02qgc)