

## NAG Library Chapter Contents

### g01 – Simple Calculations on Statistical Data

g01 Chapter Introduction – a description of the Chapter and an overview of the algorithms available

Function Name	Mark of Introduction	Purpose
g01adc	7	nag_summary_stats_freq Mean, variance, skewness, kurtosis, etc., one variable, from frequency table
g01aec	6	nag_frequency_table Frequency table from raw data
g01alc	4	nag_5pt_summary_stats Five-point summary (median, hinges and extremes)
g01amc	9	nag_double_quantiles Quantiles of a set of unordered values
g01anc	23	nag_approx_quantiles_fixed Calculates approximate quantiles from a data stream of known size
g01apc	23	nag_approx_quantiles_arbitrary Calculates approximate quantiles from a data stream of unknown size
g01atc	24	nag_summary_stats_onevar Computes univariate summary information: mean, variance, skewness, kurtosis
g01auc	24	nag_summary_stats_onevar_combine Combines multiple sets of summary information, for use after nag_summary_stats_onevar (g01atc)
g01bjc	4	nag_binomial_dist Binomial distribution function
g01bkc	4	nag_poisson_dist Poisson distribution function
g01blc	4	nag_hypergeom_dist Hypergeometric distribution function
g01dac	7	nag_normal_scores_exact Normal scores, accurate values
g01dcc	7	nag_normal_scores_var Normal scores, approximate variance-covariance matrix
g01ddc	4	nag_shapiro_wilk_test Shapiro and Wilk's $W$ test for Normality
g01dhc	4	nag_ranks_and_scores Ranks, Normal scores, approximate Normal scores or exponential (Savage) scores
g01eac	4	nag_prob_normal Probabilities for the standard Normal distribution
g01ebc	1	nag_prob_students_t Probabilities for Student's $t$ -distribution
g01ecc	1	nag_prob_chi_sq Probabilities for $\chi^2$ distribution
g01edc	1	nag_prob_f_dist Probabilities for $F$ -distribution
g01eec	1	nag_prob_beta_dist Upper and lower tail probabilities and probability density function for the beta distribution
g01efc	1	nag_gamma_dist Probabilities for the gamma distribution
g01emc	7	nag_prob_studentized_range Computes probability for the Studentized range statistic

g01epc	7	nag_prob_durbin_watson Computes bounds for the significance of a Durbin–Watson statistic
g01erc	7	nag_prob_von_mises Computes probability for von Mises distribution
g01etc	7	nag_prob_landau Landau distribution function
g01euc	7	nag_prob_vavilov Vavilov distribution function
g01ewc	25	nag_prob_dickey_fuller_unit Computes probabilities for the Dickey–Fuller unit root test
g01eyc	7	nag_prob_1_sample_ks Computes probabilities for the one-sample Kolmogorov–Smirnov distribution
g01ezc	7	nag_prob_2_sample_ks Computes probabilities for the two-sample Kolmogorov–Smirnov distribution
g01fac	4	nag_deviates_normal Deviates for the Normal distribution
g01fbc	1	nag_deviates_students_t Deviates for Student's $t$ -distribution
g01fcc	1	nag_deviates_chi_sq Deviates for the $\chi^2$ distribution
g01fdc	1	nag_deviates_f_dist Deviates for the $F$ -distribution
g01fec	1	nag_deviates_beta Deviates for the beta distribution
g01ffc	1	nag_deviates_gamma_dist Deviates for the gamma distribution
g01fmc	7	nag_deviates_studentized_range Computes deviates for the Studentized range statistic
g01ftc	7	nag_deviates_landau Landau inverse function $\Psi(x)$
g01gbc	6	nag_prob_non_central_students_t Computes probabilities for the non-central Student's $t$ -distribution
g01gcc	6	nag_prob_non_central_chi_sq Computes probabilities for the non-central $\chi^2$ distribution
g01gdc	6	nag_prob_non_central_f_dist Computes probabilities for the non-central $F$ -distribution
g01gec	6	nag_prob_non_central_beta_dist Computes probabilities for the non-central beta distribution
g01hac	1	nag_bivariate_normal_dist Probability for the bivariate Normal distribution
g01hbc	6	nag_multi_normal Computes probabilities for the multivariate Normal distribution
g01hcc	23	nag_bivariate_students_t Computes probabilities for the bivariate Student's $t$ -distribution
g01hdc	24	nag_multi_students_t Computes the probability for the multivariate Student's $t$ -distribution
g01jcc	7	nag_prob_lin_non_central_chi_sq Computes probability for a positive linear combination of $\chi^2$ variables
g01jdc	7	nag_prob_lin_chi_sq Computes lower tail probability for a linear combination of (central) $\chi^2$ variables
g01kac	9	nag_normal_pdf Calculates the value for the probability density function of the Normal distribution at a chosen point

g01kfc	9	nag_gamma_pdf Calculates the value for the probability density function of the gamma distribution at a chosen point
g01kkc	23	nag_gamma_pdf_vector Computes a vector of values for the probability density function of the gamma distribution
g01kqc	23	nag_normal_pdf_vector Computes a vector of values for the probability density function of the Normal distribution
g01lbc	24	nag_multi_normal_pdf_vector Computes a vector of values for the probability density function of the multivariate Normal distribution
g01mbc	7	nag_mills_ratio Computes reciprocal of Mills' Ratio
g01mtc	7	nag_prob_density_landau Landau density function $\phi(\lambda)$
g01muc	7	nag_prob_density_vavilov Vavilov density function $\phi_V(\lambda; \kappa, \beta^2)$
g01nac	7	nag_moments_quad_form Cumulants and moments of quadratic forms in Normal variables
g01nbc	7	nag_moments_ratio_quad_forms Moments of ratios of quadratic forms in Normal variables, and related statistics
g01ptc	7	nag_moment_1_landau Landau first moment function $\Phi_1(x)$
g01qtc	7	nag_moment_2_landau Landau second moment function $\Phi_2(x)$
g01rtc	7	nag_prob_der_landau Landau derivative function $\phi'(\lambda)$
g01sac	23	nag_prob_normal_vector Computes a vector of probabilities for the standard Normal distribution
g01sbc	23	nag_prob_students_t_vector Computes a vector of probabilities for the Student's $t$ -distribution
g01scc	23	nag_prob_chi_sq_vector Computes a vector of probabilities for $\chi^2$ distribution
g01sdc	23	nag_prob_f_vector Computes a vector of probabilities for $F$ -distribution
g01sec	23	nag_prob_beta_vector Computes a vector of probabilities for the beta distribution
g01sfc	23	nag_prob_gamma_vector Computes a vector of probabilities for the gamma distribution
g01sjc	23	nag_prob_binomial_vector Computes a vector of probabilities for the binomial distribution
g01skc	23	nag_prob_poisson_vector Computes a vector of probabilities for the Poisson distribution
g01slc	23	nag_prob_hypergeom_vector Computes a vector of probabilities for the hypergeometric distribution
g01tac	23	nag_deviates_normal_vector Computes a vector of deviates for the standard Normal distribution
g01tbc	23	nag_deviates_students_t_vector Computes a vector of deviates for Student's $t$ -distribution
g01tcc	23	nag_deviates_chi_sq_vector Computes a vector of deviates for $\chi^2$ distribution
g01tdc	23	nag_deviates_f_vector Computes a vector of deviates for $F$ -distribution
g01tec	23	nag_deviates_beta_vector Computes a vector of deviates for the beta distribution

g01tfc	23	nag_deviates_gamma_vector Computes a vector of deviates for the gamma distribution
g01wac	24	nag_moving_average Computes the mean and standard deviation using a rolling window
g01zuc	7	nag_init_vavilov Initialization function for nag_prob_density_vavilov (g01muc) and nag_prob_vavilov (g01euc)

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