RMAS2: Repeated Measures with Attrition: Sample Sizes for 2 Groups

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RMAS2 calculates the sample size for a two-group repeated measures design. It allows for attrition and a variety of variance-covariance structures for the repeated measures. Details on the methods can be found in Hedeker, Gibbons, and Waternaux (1999, *Journal of Educational and Behavioral Statistics*, 24:70-93). In running the program, the default parameter values are given in [ ].

**Program Parameters**

- **fout** - output file name
- **n** - number of timepoints (maximum is 20)
- **alpha** - alpha level for statistical test (possible values = .01, .05, .10)
- **nside** - sided test (1 or 2)
- **beta** - level of power (from .5 to .95 in multiples of .05)
- **ratio** - ratio of sample sizes (group 1 to group 2)
- **attrit** - attrition across time (1=yes, 2=no)
  - if attrit=1 - attrition rates between adjacent timepoints (assumed equal for both groups)
- **mtype** - type of expected group differences (0=means, 1=effect sizes)
  - if mtype=0 - expected difference in group means at each timepoint
  - if mtype=1 - estype - effect size type (0=constant, 1=linear trend, 2=user-defined)
    - if estype=0 - expected effect size (equal across time)
    - if estype=1 - expected effect size at last timepoint
    - if estype=2 - expected effect size at each timepoint
- **vtype** - variance-covariance structure of repeated measures (0=no random effects: \( \Sigma_y = \sigma_j^2 R \ j = 1, \ldots, n \) timepoints; 1=random-effects structure: \( \Sigma_y = X \Sigma_v X' + \sigma^2 \Omega \))
  - if vtype=0
    - standard deviation at each timepoint \( \sigma_j \)
    - correlation structure of repeated measures \( R: 1=AR1; 2=toeplitz \) or banded matrix; 3=all correlations equal
  - if vtype=1
    - \( nr \) = number of random effects (maximum is 4)
    - random-effects variance-covariance matrix \( \Sigma_v \)
    - random-effects design matrix \( X \) \( (n \times nr \) elements)
    - error variance \( \sigma^2 \) and autocorrelated error structure \( \Omega \)
- **contrast** - type of time-related contrast for statistical test (0=average across time, 1=linear trend, 2=user-defined)
  - if contrast=2 - contrast coefficient at each timepoint