

Package ‘rvTDT’

February 20, 2015

Type Package

Title population control weighted rare-variants TDT

Version 1.0

Date 2014-04-07

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Description Used to compute population controls weighted rare variants transmission distortion test

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Depends CompQuadForm (>= 1.4.1)

NeedsCompilation no

Repository CRAN

Date/Publication 2014-04-11 07:52:45

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rvTDT	<i>population control weighted rare-variants TDT</i>
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Description

Used to compute population controls weighted rare variants transmission distortion test

Usage

```
rvTDT(ped, evs, maf, threshold=1, qc.proportion=0.8)
```

Arguments

ped	contain the genotype information for all samples, assume m families and n snps, $3m * n$ matrix, each column represents a variant, coded by 0/1/2 (number of alternative alleles); each row represents a sample, the first m rows are for child, the second m rows are for mother, the last m rows are for father
evs	contain the control information from evs, 4 columns: rowname: variant's ID; chr_pos_ref_alt; col1: number of samples have genotype 2; col2: number of samples have genotype 1; col3: number of samples have genotype 0; col4: mean coverage at this locus
maf.threshold	The allowed maximum of MAF that variants will be used in computation, for unweighted and weighted by MAF, the MAF is computed through parents genotype while weighted by population controls, the maf is computed through population controls
qc.proportion	variants that have more than qc.proportion families with enough coverage will be used in computation

Details

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Value

An object of class rvTDT, basically a list including elements:

nfamily	number of total families in computation
nsnptot	the total number of snps that in the input files
nsnpcompute	the number of snps that pass the QC
p_lc_1	p value of unweighted linear combined TDT
p_lc_maf	p value of linear combined TDT weighted by MAF (dbeta(1,25,maf))
p_lc_pc	p value of linear combined TDT weighted by population controls
p_k_1	p value of unweighted kernel TDT
p_k_maf	p value of kernel TDT weighted by MAF (dbeta(1,25,maf))
p_k_pc	p value of kernel TDT weighted by population controls

Author(s)

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References

Yu Jiang, Glen A. Satten, Yujun Han, Michael P. Epstein, Erin L. Heinzen, David B. Goldstein, Andrew S. Allen; Utilizing Population Controls in Rare-Variant Case-Parent Association Tests

Examples

```
data(rvTDT.example)
attach(rvTDT.example)
rvTDT(ped, evs, maf.threshold=1)
```

rvTDT.example	<i>Example data for rvTDT</i>
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Description

Example data for rvTDT.

Format

rvTDT.example contains the following objects:

ped a numeric genotype matrix of 447 individuals and 19 SNPs. Each row represents a different individual, and each column represents a different SNP marker. The first 149 rows are genotype of children and 150-298 rows are genotype of corresponding mother and the last 149 rows are corresponding father

evs a numeric matrix of evs information for 19 variants: rowname: variant ID: chr_pos_ref_alt; col1: number of samples have genotype 2; col2: number of samples have genotype 1; col3: number of samples have genotype 0; col4: mean coverage at this locus

rvTDTs	<i>compute weights from population controls</i>
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Description

compute the p value for TDTs

Usage

```
kernel_TDT(parent.geno, child.geno, snp.weight)
lc_TDT(parent.geno, child.geno, snp.weight)
TDT_permutation(parent.geno, child.geno, snp.weight1, snp.weight2, snp.weight3, nperm)
```

Arguments

parent.geno	parents genotype
child.geno	child genotype
snp.weight	weights for each SNP
nperm	number of permutations
snp.weight1	weights =1 for all SNP
snp.weight2	weighted by MAF
snp.weight3	weighted by population controls

Details

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Value

pvalue pvalues from the test

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References

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TrendWeights *compute weights from population controls*

Description

Used to compute population controls weights using parents and controls genotype

Usage

TrendWeights(evs.sum, parent.sum)

Arguments

evs.sum contain evs information
parent.sum contain summarized parents genotype information

Details

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Value

weights return the weights computed through Armitage-trend test

Author(s)

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References

Yu Jiang, Glen A. Satten, Yujun Han, Michael P. Epstein, Erin L. Heinzen, David B. Goldstein, Andrew S. Allen; Utilizing Population Controls in Rare-Variant Case-Parent Association Tests

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