

# Package ‘GPIC’

October 12, 2022

**Type** Package

**Title** Quantifying Group Performance in Individual Competitions

**Version** 0.1.0

**Description** Compute the GPIC index as described in Pham (2020)  
<[doi:10.35542/osf.io/ajz5v](https://doi.org/10.35542/osf.io/ajz5v)>.

**Depends** R (>= 4.0.0)

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.1

**NeedsCompilation** no

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GPIC-package

*GPIC: Quantifying Group Performance in Individual Competitions*

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### Description

Compute the GPIC index as described in Pham (2020) doi: [10.35542/osf.io/ajz5v](https://doi.org/10.35542/osf.io/ajz5v).

### Guidelines

GPIC index reflects both the quantity and quality of prizes that a group of participants obtained in individual competitions. Call `vec2idx` and `df2idx` to compute GPIC index for a single group and multiple groups, respectively. The results of Vietnamese National Olympiads are provided as sample datasets `vno` and `vnomath`.

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df2idx

*Compute GPIC for Multiple Groups*

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### Description

`df2idx` computes the index based on the number of prizes that several groups obtained and the proportion of prizes in the pool.

### Usage

```
df2idx(df, pool = NULL, type = NULL)
```

**Arguments**

df	a data frame with name of groups as the first column and number of prizes as remaining columns.
pool	a vector of prize counts or proportions from the pool.
type	the type of the above-mentioned pool, "n" for counts or "p" for proportions.

**Value**

df2idx returns a dataframe with name of groups as the first column and GPIC index as the second column.

**Examples**

```
df2idx(vnomath)
df2idx(vnomath, c(61, 477, 836, 1007), "n")
df2idx(vnomath, c(0.026, 0.200, 0.351, 0.423), "p")
```

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n2p

*Calculate Proportions*

---

**Description**

n2p converts a vector of counts to a vector of proportions.

**Usage**

```
n2p(n)
```

**Arguments**

n	a vector of counts.
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**Value**

n2p returns a vector of proportions.

**Examples**

```
n2p(c(61, 477, 836, 1007))
```

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vec2idx *Compute GPIC for Single Group*

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### Description

vec2idx computes the index based on the number of prizes that a group obtained and the proportion of prizes in the pool.

### Usage

```
vec2idx(x, pool, type)
```

### Arguments

**x** a vector of prize counts from a single group.  
**pool** a vector of prize counts or proportions from the pool.  
**type** the type of the above-mentioned pool, "n" for counts or "p" for proportions.

### Value

vec2idx returns a numeric that is the GPIC index.

### Examples

```
vec2idx(c(3, 19, 34, 22), c(61, 477, 836, 1007), "n")
vec2idx(c(3, 19, 34, 22), c(0.026, 0.200, 0.351, 0.423), "p")
```

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vno *Results of Vietnamese National Olympiads 2010-2020*

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### Description

A dataset containing the information of more than 24,000 awarded students over 11 years.

### Usage

```
vno
```

### Format

A data frame with 24151 rows and 5 variables:

**ID** student ID  
**Year** year of award  
**Team** administrative contest team that delegated the student  
**Subject** test subject  
**Prize** award achieved

**Source**

doi: [10.5281/zenodo.3764691](https://doi.org/10.5281/zenodo.3764691)

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vnomath

*Results of Vietnamese Mathematical Olympiad 2010-2020*

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**Description**

A dataset containing the number of prizes in Mathematics over 11 years of administrative contest teams

**Usage**

vnomath

**Format**

A data frame with 68 rows and 5 variables:

**Team** administrative contest team

**First** number of First prizes

**Second** number of Second prizes

**Third** number of Third prizes

**Consolation** number of Consolation prizes

**Source**

doi: [10.5281/zenodo.3764691](https://doi.org/10.5281/zenodo.3764691)

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