

# Package: rgabriel (via r-universe)

October 22, 2024

**Type** Package

**Title** Gabriel Multiple Comparison Test and Plot the Confidence Interval on Barplot

**Version** 0.9

**Date** 2022-05-09

**Description** Analyze multi-level one-way experimental designs where there are unequal sample sizes and population variance homogeneity can not be assumed. To conduct the Gabriel test [doi:10.2307/2286265](https://doi.org/10.2307/2286265), create two vectors: one for your observations and one for the factor level of each observation. The function, rgabriel, conduct the test and save the output as a vector to input into the gabriel.plot function, which produces a confidence interval plot for Multiple Comparison.

**URL** <https://github.com/yufree/rgabriel>,  
<http://yufree.github.io/rgabriel/>

**License** GPL (>= 2)

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Repository** <https://yufree.r-universe.dev>

**RemoteUrl** <https://github.com/yufree/rgabriel>

**RemoteRef** HEAD

**RemoteSha** 7aa9c6955216656e9493c95b1184cf079cbb5f53

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rgabriel-package

*Gabriel Multiple Comparison Test and Plot the Confidence Interval on Barplot*

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## Description

Functions for conducting and plotting Gabriel's (1978) multiple comparison test accounting for unequal variance and unequal sample sizes.

## Details

This package was created to analyze multi-level one-way experimental designs. It is designed to handle vectorized observation and factor data where there are unequal sample sizes and population variance homogeneity can not be assumed. To conduct the Gabriel test, create two vectors: one for your observations and one for the factor level of each observation. The function, `rgabriel`, conduct the test and save the output as a vector to input into the `gabriel.plot` function, which produces a confidence interval plot for Multiple Comparison.

## Note

More details on the simulation of studentized maximum modulus's distribution from <http://cos.name/cn/topic/142002>.

## Author(s)

Yihui XIE <<https://yihui.org/>> Miao YU <<https://yufree.cn/>>

## References

- Gabriel, K.R., 1978. A Simple Method of Multiple Comparisons of Means. *Journal of the American Statistical Association* 73, 724.
- Stoline, M.R., Ury, H.K., 1979. Tables of the Studentized Maximum Modulus Distribution and an Application to Multiple Comparisons among Means. *Technometrics* 21, 87.

## See Also

[rgabriel](#), [gabriel.plot](#)

## Examples

```
# equal numbers

g <- c(1:50)
f <- c(rep(1,10),rep(2,10),rep(3,10),rep(4,10),rep(5,10))
gabriel.plot(g,f,rgabriel(g,f))

# unequal numbers
```

```
g <- c(1:40)
f <- c(rep(1,3),rep(2,12),rep(3,15),rep(4,5),rep(5,5))
gabriel.plot(g,f,rgabriel(g,f))
```

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gabriel.plot	<i>the Gabriel's barplot (or (l-u)-plot)</i>
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### Description

Make the Gabriel's barplot, if, and only if, their bar intervals are disjoint, they are differ significantly. This function could also be used to plot error bar when the bar vector is imported as upper or lower margin.

### Usage

```
gabriel.plot(x, f, upper, lower = upper, length = 0.1, ...)
```

### Arguments

x	data vector
f	factor vector
upper	the upper margin of error bar
lower	the upper margin of error bar
length	the length of error bar
...	Arguments to be passed to methods, such as graphical parameters.

### Author(s)

Miao YU

### References

Gabriel, K.R., 1978. A Simple Method of Multiple Comparisons of Means. Journal of the American Statistical Association 73, 724.

### See Also

[rgabriel](#), [barplot](#)

**Examples**

```
# equal numbers

g <- c(1:50)
f <- c(rep(1,10),rep(2,10),rep(3,10),rep(4,10),rep(5,10))
gabriel.plot(g,f,rgabriel(g,f))

# unequal numbers

g <- c(1:40)
f <- c(rep(1,3),rep(2,12),rep(3,15),rep(4,5),rep(5,5))
gabriel.plot(g,f,rgabriel(g,f))
```

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 rgabriel

*the length of bar for Gabriel's barplot*


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**Description**

Show the upper or lower confidence interval of Gabriel's barplot.

**Usage**

```
rgabriel(x, f, a = 0.05)
```

**Arguments**

x	data vector
f	factor vector
a	alpha level of mutiple comparison.

**Details**

As shown in Gabriel's paper, use  $M(\alpha, k^*, v)$ , the upper alpha point of the Studentized Maximum Modulus of  $k^*$  normals and  $v$  df. And this method is a graphical way for visually mutiple comparison.

**Value**

vstar	the length of the bar for mutiple comparison
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**Author(s)**

Yihui XIE  
Miao YU

**References**

Gabriel, K.R., 1978. A Simple Method of Multiple Comparisons of Means. *Journal of the American Statistical Association* 73, 724.

Stoline, M.R., Ury, H.K., 1979. Tables of the Studentized Maximum Modulus Distribution and an Application to Multiple Comparisons among Means. *Technometrics* 21, 87.

**See Also**

[gabriel.plot](#)

**Examples**

```
# equal numbers
```

```
g <- c(1:50)
f <- c(rep(1,10),rep(2,10),rep(3,10),rep(4,10),rep(5,10))
gabriel.plot(g,f,rgabriel(g,f))
```

```
# unequal numbers
```

```
g <- c(1:40)
f <- c(rep(1,3),rep(2,12),rep(3,15),rep(4,5),rep(5,5))
gabriel.plot(g,f,rgabriel(g,f))
```

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