
<code>inconsistent</code>	<i>Calculate the inconsistency of a <code>hclust</code> object.</i>
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Description

Calculates the inconsistency of a 'hclust' object and splits the data into clusters using a inconsistency-based cut-off.

Usage

```
inconsistent(hclust_obj, cut_point = NULL)
```

Arguments

<code>hclust_obj</code>	the input data - see details.
<code>cut_point</code>	a value of inconsistency at which to split the clusters into groups.

Details

This function calculates the inconsistency of a `hclust` object. This provides the same functionality as the `inconsistent` function in Matlab and the 'scipy' library in Python. The inconsistency can be calculated as

$$\frac{h_i - \bar{h}}{s}$$

where h_i is the height of the given subtree; and \bar{h} and s are respectively the mean and standard deviation of the height of the subtree and any non-leaf subtrees. Note that the mean and standard deviation are calculated over 1, 2, or 3 heights depending on whether each subtree has 0, 1, or 2 non-leaf subtrees. By definition, a subtree where both of its subtrees are leaves has an inconsistency of 0.

Value

The original object of class `hclust`, with additional components containing the calculated inconsistency at each merge point and, if a cut-point is specified, the resulting clusters.

<code>inconsistency</code>	The calculated inconsistency at each merge point.
<code>clusters</code>	A data frame with 2 variables: the label and the assigned cluster. (Only present if a <code>cut_point</code> is specified.)

See Also

`hclust`

Examples

```
hc <- hclust(dist(USArrests), "ave")
hc_obj <- inconsistent(hc, 1)

# the first 6 merges all involve leaves, so the inconsistency is 0.
head(with(hc_obj, cbind(merge, height, inconsistency)))

# the last 6 merges are all non-leaves, so the inconsistency can be calculated
tail(with(hc_obj, cbind(merge, height, inconsistency)))

# Each element of the tree is assigned to a cluster.
head(hc_obj$clusters)
table(hc_obj$clusters$cluster)
```