Set up age distributions (attachment)

Version 1.2.0, by Giorgio Bianchini

Description: Computes node age distributions from trees contained in an attachment.

Module type: FurtherTransformation

Module ID: `5d721496-f2fa-48de-ad0d-90ef5d8086aa`

This module is used to set up the age distributions for the nodes, that can then be plotted using the *Plot age distributions* (id `5dbe1f3c-dbea-49b3-8f04-f319aefca534`) Plot Action module.

To use this module, you should add as an attachment a tree file containing e.g. a sample from the posterior distribution of dated trees. This module will use all the trees in the file to compute the age distributions. The tree file can be in NEXUS, Newick, Newick-with-attributes, NCBI ASN.1 or Binary format.

Parameters

Attachment

Control type: Attachment

This parameter specifies the attachment from which the age distributions will be read, either as a tree file, or as a table.

Format

Control type: Drop-down list

Default value: List of trees

Possible values:

- List of trees
- Table

This parameter specifies whether the attachment contains a list of trees (e.g., posterior samples) that should be used to determine the age distributions, or a table containing the age estimates for the nodes (e.g., the output file from a MCMCTree analysis).

If the file contains a list of trees, it should be a tree file in NEXUS, Newick,

Newick-with-attributes, NCBI ASN.1 or Binary format.

If the file contains a table, this should be a tab-separated table containing a header row with parameter names, followed by data rows. The parameter names will determine the nodes to which the age estimates will be applied. Following the syntax of MCMCTree output files, parameter names for age estimates should be in the form `t_nX`, where `X` is a number identifying the node corresponding to each column. Columns with headers that do not follow this convention (e.g. `Gen`, `lnL`, ...) will be ignored.

Node indices

Control type: Drop-down list

Default value: Infer automatically

Possible values:

- Infer automatically
- Use attribute
- Load from MCMCTree output file

If the attachment contains a table, this parameter determines how the node indices that correspond to column headers are determined.

If the selected value is `Infer automatically`, the node indices are determined automatically based on the tree topology. Note that if you have altered the tree topology using another *Further transformation* module (e.g., by sorting or pruning nodes), the node indices will change, while the other options are more robust to topology changes.

If the selected value is `Use attribute`, the node indices are determined using the value of the specified attribute.

If the selected value is `Load from MCMCTree output file`, an attachment containing the MCMCTree output file (`out.txt`) should be provided, and the module will use the tree contained in there to determine the node indices.

Index attribute

Control type: Attribute selector

Default value: Name

This parameter determines the attribute used to determine node indices.

MCMCTree output file

Control type: Attachment

This parameter specifies the attachment containing the MCMCTree output file (`out.txt`) that should be used to determine the node indices.

Age type

Control type: Drop-down list

Default value: Until tips

Possible values:

- Until tips
- Since root

This parameter determines the kind of age that is computed if the attachment contains a list of trees.

If the value is `Since root`, the age of each node corresponds to the distance d (as in, the sum of branch lengths) from the node to the root of the tree; in this case, the root node would have an age of `0`.

If the value is `Until tips`, first the total length l of the tree from the root node to the most distant tip is computed; then, the age of each node is $d - l$. In this case, if all the tips of the tree are contemporaneous, they will have an age of `0`.

Compute mean

Control type: Check box

Default value: Checked

If this check box is checked, in addition to the age distribution, the mean age for each node.

Credible interval

Control type: Drop-down list

Default value: Highest-density

Possible values:

- None
- Highest-density
- Equal-tailed

This parameter determines what kind of credible interval for the age is computed. If the value is `None`, no credible interval is computed. If the value is `Highest-density`, the interval that contains the proportion of samples specified by the Threshold with the highest probability density is computed. If the value is `Equal-tailed`, the interval corresponds to the symmetrical interval around the average that contains the specified proportion of samples.

The functions for computing credible intervals are based on code from the R package `bayestestR`, available under a GPLv3 licence here.

Threshold

Control type: Slider

Default value: 0.89

Range: [0.00, 1.00]

Scaling factor

Control type: Number spin box

Default value: 1

Range: [0, $+\infty$)

This parameter is used to scale the age distributions (and the tree, if the Apply scaling to transformed tree check box is checked).

Apply scaling to transformed tree

Control type: Check box

Default value: Checked

If this check box is checked, the scaling factor is applied to the transformed tree, as well as to the age distributions.

Name

Control type: Text box

This parameter specifies a name that can be used to identify the age distributions in cases where multiple age distributions have been computed for the same tree.

Apply

Control type: Button

This button applies the changes to the other parameter values and signals that the tree needs to be redrawn.