Package 'SALURhelper'

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Title Helper Functions for SALURBAL Climate Analyses

Version 0.0.0.9000

Description This package provides helper functions analysis types commonly used by SALURBAL, including case time series, distributed lag nonlinear models, and conditional quasi-Poisson regression. This package also includes basic functions for accessing data.

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Contents

`QAIC` *Calculate QAIC and QBIC*

Description

This function calculates quasi-Akaike information criterion (QAIC) or the quasi-Bayesian information criterion (QBIC) for quasi-Poisson regression as defined in Gasparrini, Armstrong, and Kenward (2010). When comparing multiple models, the "best" model is that which minimizes these criteria.

Usage

```
QAIC(model)

QBIC(model)
```

Arguments

`model`	A model object inheriting from the `"glm"` class, whose family parameter was specified as `quasipoisson`.

Details

The equations used to calculate the QAIC and QBIC are QAIC $= -2L(\hat{\boldsymbol{\theta}}) + 2\hat{\phi}k$, and QBIC $= -2L(\hat{\boldsymbol{\theta}}) + 2\hat{\phi}k$, where L is the log-likelihood of the fitted model with parameters $\hat{\boldsymbol{\theta}}$, $\hat{\phi}$ is the overdispersion parameter, k is the number of parameters, and n is the number of observations.

Value

Returns a number, either the QAIC or QBIC.

References

Gasparrini, A., B. Armstrong, and M. G. Kenward. "Distributed Lag Non-linear Models." *Statistics in Medicine* 29, no. 21 (2010): 2224–34. https://doi.org/10.1002/sim.3940.

Examples

```
fit <- glm(hp ~ mpg + disp + wt, family = "quasipoisson", data = mtcars)
AIC(fit)
QAIC(fit)
```

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