

# Package ‘safeBinaryRegression’

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**Title** Safe Binary Regression

**Author** Kjell Konis <kjell.konis@epfl.ch>

**Maintainer** Kjell Konis <kjell.konis@epfl.ch>

**Depends** R (>= 2.9.1), lpSolveAPI (>= 5.5.0.14)

**Description** Overloads the glm function in the stats package so that a test for the existence of the maximum likelihood estimate is included in the fitting procedure for binary regression models.

**License** GPL-2

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glm	<i>Fitting Generalized Linear Models</i>
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### Description

This function overloads the [glm](#) function so that a check for the existence of the maximum likelihood estimate is computed before fitting a ‘glm’ with a binary response.

**Usage**

```
glm(formula, family = gaussian, data, weights, subset, na.action, start = NULL, etastart, mustart, offset)
```

**Arguments**

The arguments are identical to the arguments of the `glm` function provided in the ‘stats’ package with the exception of

either “find” or “test”. Both options prevent the model from being fit to binary data when the maximum likelihood estimate does not exist. Additionally, when `separation = "find"`, the terms separating the sample points are identified when the maximum likelihood estimate is found not to exist.

The following arguments are passed to the `glm` function:

<code>separation</code>	see <code>glm</code>
<code>family</code>	see <code>glm</code>
<code>data</code>	see <code>glm</code>
<code>weights</code>	see <code>glm</code>
<code>subset</code>	see <code>glm</code>
<code>na.action</code>	see <code>glm</code>
<code>start</code>	see <code>glm</code>
<code>etastart</code>	see <code>glm</code>
<code>mustart</code>	see <code>glm</code>
<code>offset</code>	see <code>glm</code>
<code>control</code>	see <code>glm</code>
<code>model</code>	see <code>glm</code>
<code>method</code>	see <code>glm</code>
<code>x</code>	see <code>glm</code>
<code>y</code>	see <code>glm</code>
<code>contrasts</code>	see <code>glm</code>
<code>...</code>	see <code>glm</code>

**Details**

This function checks for the existence of the maximum likelihood estimate before the ‘glm’ function is used to fit binary regression models by solving the linear program proposed in Konis (2007).

**Value**

See the return value for the `glm` function.

**Author(s)**

Kjell Konis <kjell.konis@epfl.ch>

## References

Kjell Konis (2007). Linear programming algorithms for detecting separated data in binary logistic regression models. DPhil, University of Oxford <http://ora.ouls.ox.ac.uk/objects/uuid:8f9ee0d0-d78e-4101-9ab4-f9cbceed2a2a>

## See Also

[glm](#).

## Examples

```
## A set of 4 completely separated sample points ##  
x <- c(-2, -1, 1, 2)  
y <- c(0, 0, 1, 1)
```

```
## Not run: glm(y ~ x, family = binomial)
```

```
## A set of 4 quasicompletely separated sample points ##  
x <- c(-2, 0, 0, 2)  
y <- c(0, 0, 1, 1)
```

```
## Not run: glm(y ~ x, family = binomial)
```

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