

**fmm: glm** — Finite mixtures of generalized linear regression models[Description](#)[Remarks and examples](#)[Quick start](#)[Stored results](#)[Menu](#)[Methods and formulas](#)[Syntax](#)[Also see](#)

## Description

`fmm: glm` fits mixtures of generalized linear regression models; see [\[FMM\] fmm](#) and [\[R\] glm](#) for details.

## Quick start

Mixture of two normal distributions of  $y$

```
fmm 2: glm y, family(gaussian) link(identity)
```

Mixture of two gamma distributions of  $y$

```
fmm 2: glm y, family(gamma)
```

Mixture of two gamma regression models of  $y$  on  $x_1$  and  $x_2$

```
fmm 2: glm y x1 x2, family(gamma)
```

As above, but with class probabilities depending on  $z_1$  and  $z_2$

```
fmm 2, lcprob(z1 z2): glm y x1 x2, family(gamma)
```

With robust standard errors

```
fmm 2, vce(robust): glm y x1 x2, family(gamma)
```

Constrain coefficients on  $x_1$  and  $x_2$  to be equal across classes

```
fmm 2, lcinvariant(coef): glm y x1 x2
```

## Menu

Statistics > FMM (finite mixture models) > Generalized linear model (GLM)

## Syntax

Basic syntax

```
fmm # : glm deivar [indepvars] [, options]
```

Full syntax

```
fmm # [if] [in] [weight] [, fmmopts]: glm deivar [indepvars] [, options]
```

where # specifies the number of class models.

<i>options</i>	Description
----------------	-------------

Model

<u>family</u> ( <i>familyname</i> )	distribution of <i>deivar</i> ; default is family( <i>gaussian</i> )
<u>link</u> ( <i>linkname</i> )	link function; default varies per family
<u>noconstant</u>	suppress the constant term
<u>exposure</u> ( <i>varname<sub>e</sub></i> )	include $\ln(\text{varname}_e)$ in model with coefficient constrained to 1
<u>offset</u> ( <i>varname<sub>o</sub></i> )	include <i>varname<sub>o</sub></i> in model with coefficient constrained to 1
<u>asis</u>	retain perfect predictor variables

*indepvars* may contain factor variables; see [U] 11.4.3 Factor variables.

*deivar* and *indepvars* may contain time-series operators; see [U] 11.4.4 Time-series varlists.

For a detailed description of *options*, see *Options* in [R] glm.

<i>familyname</i>	Description
<u>gaussian</u>	Gaussian (normal); the default
<u>bernoulli</u>	Bernoulli
<u>beta</u>	beta
<u>binomial</u> [ <i>#</i>   <i>varname</i> ]	binomial; default number of binomial trials is 1
<u>poisson</u>	Poisson
<u>nbinomial</u> [ <i>mean</i>   <u>constant</u> ]	negative binomial; default dispersion is mean
<u>exponential</u>	exponential
<u>gamma</u>	gamma
<u>lognormal</u>	lognormal
<u>loglogistic</u>	loglogistic
<u>weibull</u>	Weibull

*bernoulli*, *beta*, *exponential*, *lognormal*, *loglogistic*, and *weibull* are extensions available with *fmm: glm* that are not available with *glm*.

<i>linkname</i>	Description
<u>identity</u>	identity
<u>log</u>	log
<u>logit</u>	logit
<u>probit</u>	probit
<u>cloglog</u>	complementary log-log

<i>fmmopts</i>	Description
<b>Model</b>	
<code>lcinvariant(<i>pclassname</i>)</code>	specify parameters that are equal across classes; default is <code>lcinvariant(none)</code>
<code>lcprob(<i>varlist</i>)</code>	specify independent variables for class probabilities
<code>lclabel(<i>name</i>)</code>	name of the categorical latent variable; default is <code>lclabel(Class)</code>
<code>lcbase(#)</code>	base latent class
<code>constraints(<i>constraints</i>)</code>	apply specified linear constraints
<code>collinear</code>	keep collinear variables
<b>SE/Robust</b>	
<code>vce(<i>vcetype</i>)</code>	<i>vcetype</i> may be <code>oim</code> , <code>robust</code> , or <code>cluster <i>clustvar</i></code>
<b>Reporting</b>	
<code>level(#)</code>	set confidence level; default is <code>level(95)</code>
<code>nocnsreport</code>	do not display constraints
<code>noheader</code>	do not display header above parameter table
<code>nodvheader</code>	do not display dependent variables information in the header
<code>notable</code>	do not display parameter table
<code>display_options</code>	control columns and column formats, row spacing, line width, display of omitted variables and base and empty cells, and factor-variable labeling
<b>Maximization</b>	
<code>maximize_options</code>	control the maximization process
<code>startvalues(<i>svmethod</i>)</code>	method for obtaining starting values; default is <code>startvalues(factor)</code>
<code>emopts(<i>maxopts</i>)</code>	control EM algorithm for improved starting values
<code>noestimate</code>	do not fit the model; show starting values instead
<code>coeflegend</code>	display legend instead of statistics
<p><i>varlist</i> may contain factor variables; see [U] 11.4.3 <b>Factor variables</b>.</p> <p><code>by</code>, <code>statsby</code>, and <code>svy</code> are allowed; see [U] 11.1.10 <b>Prefix commands</b>.</p> <p><code>vce()</code> and weights are not allowed with the <code>svy</code> prefix; see [SVY] <b>svy</b>.</p> <p><code>fweights</code>, <code>iweights</code>, and <code>pweights</code> are allowed; see [U] 11.1.6 <b>weight</b>.</p> <p><code>coeflegend</code> does not appear in the dialog box.</p> <p>See [U] 20 <b>Estimation and postestimation commands</b> for more capabilities of estimation commands.</p> <p>For a detailed description of <i>fmmopts</i>, see <i>Options</i> in [FMM] <b>fmm</b>.</p>	
<i>pclassname</i>	Description
<code>cons</code>	intercepts and cutpoints
<code>coef</code>	fixed coefficients
<code>errvar</code>	covariances of errors
<code>scale</code>	scaling parameters
<code>all</code>	all the above
<code>none</code>	none of the above; the default

## Remarks and examples

For a general introduction to finite mixture models, see [FMM] **fmm intro**. For general information about generalized linear regression, see [R] **glm**. For examples using **fmm**, see examples in *Contents*.

If you specify both `family()` and `link()`, not all combinations make sense. You may choose from the following combinations:

	identity	log	logit	probit	cloglog
Gaussian	D	x			
Bernoulli			D	x	x
beta			D	x	x
binomial			D	x	x
Poisson		D			
negative binomial		D			
exponential		D			
gamma		D			
lognormal		D			
loglogistic		D			
Weibull		D			

D denotes the default.

## Stored results

See *Stored results* in [FMM] **fmm**.

## Methods and formulas

See *Methods and formulas* in [FMM] **fmm**.

## Also see

[FMM] **fmm** — Finite mixture models using the **fmm** prefix

[FMM] **fmm intro** — Introduction to finite mixture models

[FMM] **Glossary**

[R] **glm** — Generalized linear models

[SEM] **gsem** — Generalized structural equation model estimation command

[SVY] **svy estimation** — Estimation commands for survey data