

**fmm: pointmass** — Finite mixtures models with a density mass at a single point

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## Description

`fmm: pointmass` is a degenerate distribution that takes on a single integer value with probability one. This distribution cannot be used by itself and is always combined with other `fmm` distributions, often to model zero-inflated outcomes.

## Quick start

Zero-inflated Poisson regression of `y` on `x1` and `x2`

```
fmm : (pointmass y) (poisson y x1 x2)
```

As above, but add predictors `w1` and `w2` to model the pointmass class probability

```
fmm : (pointmass y, lcprow(w1 w2)) (poisson y x1 x2)
```

Ordered logistic regression of `y` on `x1` and `x2` with inflation at 1

```
fmm : (pointmass y, value(1)) (ologit y x1 x2)
```

## Menu

Statistics > FMM (finite mixture models) > General estimation and regression

## Syntax

```
fmm [if] [in] [weight] [, fmmopts]: (pointmass depvar [, options])
      (component1) [(component2) ...]
```

*component* is defined in [FMM] **fmm**.

<i>options</i>	Description
<u>lcp</u> rob( <i>varlist</i> )	specify independent variables for class probability
<u>val</u> ue(#)	integer-valued location of the point mass

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

<i>fmmopts</i>	Description
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### Model

<u>l</u> cinvariant( <i>pclassname</i> )	specify parameters that are equal across classes; default is <u>l</u> cinvariant( <i>none</i> )
<u>l</u> cp <u>ro</u> b( <i>varlist</i> )	specify independent variables for class probabilities
<u>l</u> cl <u>ab</u> el( <i>name</i> )	name of the categorical latent variable; default is <u>l</u> cl <u>ab</u> el( <i>Class</i> )
<u>l</u> cb <u>as</u> e(#)	base latent class
<u>c</u> on <u>st</u> ra <u>in</u> ts( <i>constraints</i> )	apply specified linear constraints

### SE/Robust

<u>v</u> ce( <i>vcetype</i> )	<i>vcetype</i> may be <i>oim</i> , <i>opg</i> , <u>r</u> obust, or <u>c</u> luster <i>clustvar</i>
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### Reporting

<u>l</u> ev <u>e</u> l(#)	set confidence level; default is <u>l</u> ev <u>e</u> l(95)
<u>n</u> oc <u>n</u> s <u>r</u> e <u>p</u> ort	do not display constraints
<u>n</u> o <u>h</u> e <u>a</u> d <u>e</u> r	do not display header above parameter table
<u>n</u> o <u>d</u> v <u>h</u> e <u>a</u> d <u>e</u> r	do not display dependent variables information in the header
<u>n</u> o <u>t</u> ab <u>l</u> e	do not display parameter table
<i>display_options</i>	control columns and column formats, row spacing, line width, display of omitted variables and base and empty cells, and factor-variable labeling

### Maximization

<i>maximize_options</i>	control the maximization process
<u>s</u> ta <u>r</u> t <u>v</u> al <u>u</u> es( <i>svmethod</i> )	method for obtaining starting values; default is <u>s</u> ta <u>r</u> t <u>v</u> al <u>u</u> es( <i>factor</i> )
<u>e</u> m <u>o</u> p <u>t</u> s( <i>maxopts</i> )	control EM algorithm for improved starting values
<u>n</u> o <u>e</u> st <u>i</u> m <u>a</u> t <u>e</u>	do not fit the model; show starting values instead
<u>c</u> o <u>l</u> l <u>i</u> n <u>e</u> a <u>r</u>	keep collinear variables
<u>c</u> o <u>e</u> f <u>l</u> e <u>g</u> e <u>n</u> d	display legend instead of statistics

*varlist* may contain factor variables; see [U] 11.4.3 [Factor variables](#).

*by*, *collect*, *statsby*, and *svy* are allowed; see [U] 11.1.10 [Prefix commands](#).

*vce()* and *weights* are not allowed with the *svy* prefix; see [SVY] [svy](#).

*fweights*, *iweights*, and *pweights* are allowed; see [U] 11.1.6 [weight](#).

*collinear* and *coeflegend* do not appear in the dialog box.

See [U] 20 [Estimation and postestimation commands](#) for more capabilities of estimation commands.

For a detailed description of *fmmopts*, see [Options](#) in [FMM] [fmm](#).

<i>pclassname</i>	Description
<i>cons</i>	intercepts and cutpoints
<i>coef</i>	fixed coefficients
<i>errvar</i>	covariances of errors
<i>scale</i>	scaling parameters
<i>all</i>	all the above
<i>none</i>	none of the above; the default

## Options

*lcprob(varlist)* specifies that the linear prediction for belonging to the point mass component includes the variables in *varlist*. *lcinvariant()* has no effect on these parameters.

*value(#)* specifies the value of *depvar* at which the latent class has a singular point mass. The default is *value(0)*. Only integer values are allowed for *#*.

## Remarks and examples

[stata.com](http://www.stata.com)

For a general introduction to finite mixture models, see [FMM] [fmm intro](#). See [FMM] [Example 3](#) where *pointmass* is used to fit a zero-inflated Poisson model. See [FMM] [Example 4](#) where *pointmass* is used to fit a mixture cure model to survival data. Other examples are available; see [examples in Contents](#).

## 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] **fmm postestimation** — Postestimation tools for fmm
- [FMM] **Example 3** — Zero-inflated models
- [FMM] **Example 4** — Mixture cure models for survival data
- [FMM] **Glossary**
- [R] **zinb** — Zero-inflated negative binomial regression
- [R] **zioprobit** — Zero-inflated ordered probit regression
- [R] **zip** — Zero-inflated Poisson regression
- [SVY] **svy estimation** — Estimation commands for survey data