**fmm: streg — Finite mixtures of parametric survival models**

**Description**

fmm: streg fits mixtures of parametric survival regression models; see [FMM] fmm and [ST] streg for details.

**Quick start**

Mixture of two Weibull distributions using stset data

```stata
fmm 2: streg, distribution(weibull)
```

Mixture of two exponential distributions

```stata
fmm 2: streg, distribution(exponential)
```

Mixture of two Weibull survival models with covariates \( x_1 \) and \( x_2 \)

```stata
fmm 2: streg y x1 x2, distribution(weibull)
```

As above, but with class probabilities depending on \( z_1 \) and \( z_2 \)

```stata
fmm 2, lcprob(z1 z2): streg y x1 x2, distribution(weibull)
```

With robust standard errors

```stata
fmm 2, vce(robust): streg y x1 x2, distribution(weibull)
```

Constrain coefficients on \( x_1 \) and \( x_2 \) to be equal across classes

```stata
fmm 2, lcinvariant(coef): streg y x1 x2, distribution(weibull)
```

**Menu**

Statistics > FMM (finite mixture models) > Parametric survival regression
Syntax

Basic syntax

\texttt{fmm \# : streg \ [ \textit{indepvars} ] \ , \textit{options} ]}

Full syntax

\texttt{fmm \# \ [ \textit{if} ] \ [ \textit{in} ] \ [ \textit{weight} ] \ , \textit{fmnopts} ] : streg \ [ \textit{indepvars} ] \ , \textit{options} ]}

where \# specifies the number of class models.

\textit{options} Description

Model

\texttt{noconstant} suppress the constant term
\texttt{*distribution(\textit{distname})} specify survival distribution
\texttt{time} use accelerated failure-time metric
\texttt{offset(\textit{varname})} include \textit{varname} in model with coefficient constrained to 1

\texttt{*distribution(\textit{distname})} is required.

You must \texttt{stset} your data before using \texttt{fmm: streg}; see [ST] stset.

\textit{indepvars} may contain factor variables; see [U] 11.4.3 Factor variables.

\textit{depvar} and \textit{indepvars} may contain time-series operators; see [U] 11.4.4 Time-series varlists.

For a detailed description of \textit{options}, see Options in [ST] streg.

\textit{distname} Description

\texttt{exponential} exponential survival distribution
\texttt{loglogistic} loglogistic survival distribution
\texttt{logistic} synonym for loglogistic
\texttt{weibull} Weibull survival distribution
\texttt{lognormal} lognormal survival distribution
\texttt{lnormal} synonym for lognormal
\texttt{*gamma} gamma survival distribution

\texttt{*fmm: streg} uses the gamma survival distribution and not the generalized gamma distribution that is used by \texttt{streg}. 
### fmmopts

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>lcinv</code>ariant(<code>pclassname</code>)</td>
<td>specify parameters that are equal across classes; default is <code>lcinv</code>ariant(<code>none</code>)</td>
</tr>
<tr>
<td><code>lcpro</code>b(<code>varlist</code>)</td>
<td>specify independent variables for class probabilities</td>
</tr>
<tr>
<td><code>lc</code>lab<code>el(</code>name`)</td>
<td>name of the categorical latent variable; default is <code>lc</code>abel(<code>Class</code>)</td>
</tr>
<tr>
<td><code>lc</code>base(#)</td>
<td>base latent class</td>
</tr>
<tr>
<td><code>const</code>raints(<code>constraints</code>)</td>
<td>apply specified linear constraints</td>
</tr>
</tbody>
</table>

### SE/Robust

| `vce(vcetype)`                | `vcetype` may be `oim`, `robust`, or `cluster clustvar`                     |

### Reporting

| `level(#)`                    | set confidence level; default is `level(95)`                                |
| `nocnsr`eport                 | do not display constraints                                                 |
| `nohe`ader                    | do not display header above parameter table                                |
| `nodvhe`ader                  | do not display dependent variables information in the header               |
| `notable`                     | do not display parameter table                                             |
| `display_options`             | control columns and column formats, row spacing, line width, display of omitted variables and base and empty cells, and factor-variable labeling |

### Maximization

| `maximize_opt`ions             | control the maximization process                                           |
| `startvalues(svmethod)`        | method for obtaining starting values; default is `startvalues(factor)`     |
| `em`opts(`maxopts`)            | control EM algorithm for improved starting values                          |
| `noest`imate                   | do not fit the model; show starting values instead                         |
| `c`oelinear                   | keep collinear variables                                                   |
| `coeflegend`                  | display legend instead of statistics                                        |

`varlist` may contain factor variables; see [U] 11.4.3 Factor variables.

by, 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.

`coeflegend` does 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.

### `pclassname`

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cons</code></td>
</tr>
<tr>
<td><code>coef</code></td>
</tr>
<tr>
<td><code>errvar</code></td>
</tr>
<tr>
<td><code>scale</code></td>
</tr>
<tr>
<td><code>all</code></td>
</tr>
<tr>
<td><code>none</code></td>
</tr>
</tbody>
</table>
Remarks and examples

For a general introduction to finite mixture models, see [FMM] fmm intro. For general information about parametric survival models, see [ST] streg. For examples using fmm, 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 4 — Mixture cure models for survival data
[FMM] Glossary
[ST] streg — Parametric survival models
[ST] stset — Declare data to be survival-time data
[SVY] svy estimation — Estimation commands for survey data