Features

Maximum Likelihood Estimation

- Over a thousand built-in estimators
- Intuitive and consistent syntax
- Survey data support
- Program your own estimators
- Numerical or analytical derivatives
- Standard errors: OIM, OPG, Robust–Huber/White/sandwich, cluster–robust, bootstrap, jackknife, and more
- Powerful postestimation features
- Use point-and-click or type commands

Stata offers over a thousand built-in ML estimators.

All follow elegant and intuitive syntax and have consistent output. Learn one command, know how to use them all!

- **Linear regression**
  
  . regress y x1 x2

- **Logistic regression**
  
  . logistic y x1 x2

- **Poisson regression**
  
  . poisson y x1 x2

- **Poisson regression with identity link (GLM)**
  
  . glm y x1 x2, family(poisson) link(identity)

- **ARIMA/ARMAX**
  
  . arima y x1 x2, arima(2,1,3)

- **Logistic regression with survey data**
  
  . svy: logistic y x1 x2

After estimation, easily access powerful postestimation features

. postest
Write your own ML estimators

Stata offers a powerful environment for you to add your own ML estimators. For log likelihoods that can be written as simple expressions, just type the expression in the `mlexp` command. For more complicated expressions, you can write a program in Stata’s scripting or matrix languages and use the `ml` suite to do the rest for you. You can even turn your ML evaluator into a command!

**Type a simple expression**

Use `mlexp` when your log likelihood can be expressed simply. For example, for normal linear regression,

```
ml (innormalden(y, N(0, sigma)))
```

| Coef. | Std. Err. | t-ratio | P>|t| | 95% Conf. Interval |
|-------|-----------|---------|------|-------------------|
| beta  | 0.608867  | 0.050932| -11.76 | 0.000 | -0.709899 to -0.507475 |
| sigma | 3.9921    | 2.18629 | 18.07  | 0.000 | 2.245060 to 3.938059 |

**Write a program**

Write a program to evaluate more complicated likelihood functions.

```
program mynormal
  version 14
  args lnf
  quietly replace `lnf' = lnnormalden(`y', `mu', `sigma')
end
```

Your new command automatically has many nice features such as options for robust and cluster-robust standard errors without any extra programming effort.

```
mynormal y x, vce(robust)
mynormal y x, vce(cluster id)
```

With a few more lines of code, your command can even support survey data,

```
svy: mynormal y x
```

Your command will also automatically work with postestimation features such as Wald tests, likelihood-ratio tests, contrasts, and much more.

**Create your own command**

With another small program, you can turn your likelihood-evaluation program into a full-fledged Stata command.

```
program mynormal
  version 14
  args lnf
  ml model lf mynormal(y = x) (sigma = ), maximize
  ml display
end
```

```
mynormal y x
```

Learn more about MLE and other Stata features at [stata.com/features](http://stata.com/features).