Mata is a matrix programming language that can be used by those who want to perform matrix calculations interactively and by those who want to add new features to Stata.

The *Mata Reference Manual* is comprehensive. If it seems overly comprehensive and too short on explanation as to why things work the way they do and how they could be used, we have a suggestion. See *The Mata Book* by William Gould (428 pages) or *An Introduction to Stata Programming* by Christopher Baum (412 pages). Baum’s book assumes that you are familiar with Stata but new to programming. Gould’s book assumes that you have some familiarity with programming and goes on from there. The books go well together.

This manual is divided into six sections. Each section is organized alphabetically, but there is an introduction in front that will help you get around.

If you are new to Mata, here is a helpful reading list. Start by reading

- **First** Introduction and first session
- **Interactive** Using Mata interactively
- **How** How Mata works
You may find other things in section [M-1] that interest you. For a table of contents, see

[M-1] Intro  Introduction and advice

Whenever you see a term that you are unfamiliar with, see

[M-6] Glossary  Mata glossary of common terms

Now that you know the basics, if you are interested, you can look deeper into Mata’s programming features:

[M-2] Syntax  Mata language grammar and syntax

[M-2] Syntax is pretty dense reading, but it summarizes nearly everything. The other entries in [M-2] repeat what is said there but with more explanation; see

[M-2] Intro  Language definition

because other entries in [M-2] will interest you. If you are interested in object-oriented programming, be sure to see [M-2] class.

Along the way, you will eventually be guided to sections [M-4] and [M-5]. [M-5] documents Mata’s functions; the alphabetical order makes it easy to find a function if you know its name but makes learning what functions there are hopeless. That is the purpose of [M-4]—to present the functions in logical order. See

[M-4] Intro  Categorical guide to Mata functions

Mathematical

[M-4] Matrix  Matrix functions
[M-4] Solvers  Matrix solvers and inverters
[M-4] Scalar  Scalar functions
[M-4] Statistical  Statistical functions
[M-4] Mathematical  Other important functions

Utility and manipulation

[M-4] Standard  Functions to create standard matrices
[M-4] Utility  Matrix utility functions
[M-4] Manipulation  Matrix manipulation functions

Stata interface

[M-4] Stata  Stata interface functions

String, I/O, and programming

[M-4] String  String manipulation functions
[M-4] IO  I/O functions
[M-4] Programming  Programming functions
References

Baum, C. F. 2016. *An Introduction to Stata Programming*. 2nd ed. College Station, TX: Stata Press.


Also see

[M-1] **First** — Introduction and first session

[M-6] **Glossary**