# TRAINING COURSE | ONLINE
# ANALYSING MICRO DATA IN STATA
## 9-10, 16-17, 23-24 and 25 October 2023

TStat's *Analysing Micro Data in Stata* course offers participants a comprehensive introduction to the principle methodologies used in the analysis of micro data. Micro data, data which contains information at the level of a specific unit (such as individuals, firms or entities), has by its very nature become an increasingly important source of information offering researchers and policy makers an effective *tool* with which to obtain a more in-depth understanding of an array of political, socio-economic and public health phenomena. As such the collection and subsequent analysis of micro data over recent years has proved to be the key to policy formulation, the targeting of interventions and the subsequent monitoring and measurement of the impact of such interventions and policies. Whilst these techniques have been traditionally more applied in the field of economics, the increasing availability of micro data has over recent years resulted in a steady increase in the analysis of micro data by researchers working in Political and Social Sciences, Biostatistics, Epidemiology and Public Health.

## COURSE STRUCTURE

TStat's introduction to micro data analysis course focuses, from both a theoretical and applied point of view, on the following methodologies: count models, binary dependent variable models, multinomial models, Tobit and Interval Regression models, models with treatment variables and Sample Selection and the Control function approach.

In common with TStat's training philosophy, each individual session is composed of both a theoretical component (in which the techniques and underlying principles behind them are explained), and an applied (hands-on) segment, during which participants have the opportunity to implement the techniques using real data under the watchful eye of the course tutor. Throughout the course, theoretical sessions are reinforced by case study examples, in which the course tutor discusses and highlights potential pitfalls and the advantages of individual techniques. The intuition behind the choice and implementation of a specific technique is of the utmost importance. In this manner, the course leader is able to bridge the "often difficult" gap between abstract theoretical methodologies, and the practical issues one encounters when dealing with real data.

## COURSE OUTCOMES

At the end of the course, participants are expected to be able to autonomously implement (with the help of the Stata routine templates specifically developed for the course) the appropriate estimation techniques, given both the nature of their data and the analysis in hand.

## COURSE CODE

D-EF13-A-OL

https://www.tstattraining.eu/training/analysing-micro-data-stata-a-ol/

# ANALYSING MICRO DATA IN STATA

## TARGET AUDIENCE

Researchers and Ph.D. Students, Professionals working in biostatistics, economics, epidemiology, finance, public health, psychology, social and political sciences needing to acquire the necessary statistical requisites required to independently conduct empirical analysis using micro data.

## PREREQUISITES

Participants are required to have a working knowledge of:

- the classical OLS regression model: Model Assumptions, Estimation and Inference;
- instrumental Variables (IV) and General Method of Moments (GMM) estimation techniques;
- the statistical software Stata: including familiarity with Stata variable creation commands and Stata *do files*.

Those needing to refresh these concepts are referred to:

- Cameron, A. C. & Trivedi, P. K. (2022). *Microeconometrics Using Stata, Volume I: Cross-Sectional and Panel Regression Methods*. Second Edition. Stata Press. Chapters: 1-7.

## PROGRAM

**SESSION I: COUNT MODELS**

1. Count Model Estimators in Stata: The Poisson Model
   - Non-Linear Least Squares and GMM Estimators, Maximum Likelihood Estimators in Stata: ***nl, gmm, poisson***
   - Models with endogenous regressors: ***gmm*** and ***ivpoisson***
2. Estimation and Specification tests in the presence of *overdispersion*: the *Generalized Negative Binomial Model*: ***nbreg, gnbreg***
3. Estimation and interpretation of marginal effects using the Stata post-estimation command ***margins***

**SESSION II: DISCRETE DEPENDENT VARIABLE MODELS**

1. Estimating linear models with binary dependent variables – Logit, Probit and the Linear Probability Model: ***probit, logit, regress***
2. The Heteroskedastic Probit Model and tests of heteroskadicity: ***hetprobit***
3. Measures of Goodness of Fit and Specification Tests: ***tabulate, estat classification, estat gof***
4. Independent Latent Heterogeneity in Probit Models
5. Estimating marginal effects: ***margins***
6. Numerical problems with Logit and Probit

*T Stat*

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**SESSION III:**
**PROBIT MODELS WITH ENDOGENOUS**
**REGRESSORS**

1. The *Control Function* (CF) in the presence of continuous endogenous regressors
2. Testing for exogeneity in the CF framework
3. *Bootstrap* standard error estimation in the CF approach
4. Maximum likelihood estimation in the presence of continuous endogenous regressors: ***ivprobit***
5. The multivariate recursive Probit estimator as a solution to the problem of the presence of binary endogenous regressors: ***biprobit, mvprobit, cmp***
6. Measures of Goodness of Fit: ***tabulate, estat classification, estat correlation***
7. Estimating marginal effects: ***margins***

**SESSION IV:**
**MULTINOMIAL MODELS**

1. Ordered categorical variable models (the Ordered Probit and Ordered Logit Estimators): ***oprobit*** and ***ologit***
2. The Heteroskedastic Probit Model and tests of heteroskadicity: ***hetoprobit***
3. Models with categorical (but unordered) variables - Multinomial Logit and Multinomial Probit estimators: ***mlogit, mprobit***
4. MacFadden's Choice Model - categorical variable models with alternative specific regressors: ***cmclogit, cmcprobit***
5. Measures of Goodness of Fit and Specification Tests
6. Estimation and interpretation of marginal effects using the Stata post estimation command ***margins***

**SESSION V:**
**THE TOBIT MODEL,**
**INTERVAL REGRESSION AND**
*SAMPLE SELECTION*

1. The Tobit Model - ML and Two-Step Least Squares: ***tobit, heckman***
2. The *Control Function* (CF) approach in the presence of continuous endogenous regressors, exogeneity tests and Bootstrap *standard errors*
3. The Maximum Likelihood estimator for Tobit models with endogenous regressors: ***ivtobit***
4. Interval Regression: a generalization of the Tobit Model: ***intreg***
5. Estimators for Sample Selection Models: ***heckman***
6. Estimation and interpretation of marginal effects using the Stata post estimation command ***margins***

## SUGGESTED READINGS

- Cameron, A. C. & Trivedi, P. K. (2022). *Microeconometrics Using Stata, Volume I: Cross-Sectional and Panel Regression Methods*. Second Edition. Stata Press.
- Cameron, A. C. & Trivedi, P. K. (2022). *Microeconometrics Using Stata, Volume II: Nonlinear Models and Casual Inference Methods*. Second Edition. Stata Press.
- Woodridge, J. (2010). *Econometric Analysis of Cross Section and Panel Data*. MIT Press.
- Cameron, A. C. & Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications*. Cambridge University Press.

## DATE AND LOCATION

The 2023 edition of this training course will be offered online on a part-time basis on the 9th-10th, 16th-17th, 23rd-24th of October from 10 am to 1.30 pm Central European Summer Time and on the 25th October from 2 to 4.30 pm. Central European Summer Time (CEST).

https://www.tstattraining.eu/training/analysing-micro-data-stata-a-ol/

# ANALYSING MICRO DATA IN STATA

## REGISTRATION FEES

Full-time Students*: € 1185.00
Ph.D. Students: € 1515.00
Academic: € 1760.00
Commercial: € 2360.00

*To be eligible for student prices, participants must provide proof of their **full-time** student status for the current academic year. Our standard policy is to provide all **full-time students**, be they Undergraduates or Masters students, access to student participation rates. Part-time master and doctoral students who are also currently employed will however, be allocated academic status.

Fees are subject to VAT (applied at the current Italian rate of 22%). Under current EU fiscal regulations, VAT will not however applied to companies, Institutions or Universities providing a valid tax registration number.

The number of participants is limited to 8. Places will be allocated on a first come, first serve basis. The course will be officially confirmed, when at least 5 individuals are enrolled.

Course fees cover: I) teaching materials - copies of lecture slides, databases and Stata programs specifically developed for the course; ii) a temporary licence of Stata valid for 30 days from the day before the course commences.

Individuals interested in attending this workshop must return their completed registration forms by email (training@tstat.eu) to TStat by the 29th September 2023.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at https://www.tstattraining.eu/training/analysing-micro-data-stata-a-ol/.

## CONTACTS

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