

ReGenesees

1. Software name:	ReGenesees (R Evolved Generalised Software for Sampling Estimates and Errors in Surveys)
2. Contact details:	Name: Diego Zardetto email: zardetto@istat.it organisation: ISTAT, Italy
3. Main purpose of the software:	<p>What is ReGenesees</p> <p>ReGenesees (R Evolved Generalized Software for Sampling Estimates and Errors in Surveys) is a full-fledged R software for design-based and model-assisted analysis of complex sample surveys. This system is the outcome of a long term research and development project, aimed at defining a new standard for calibration, estimation and sampling error assessment to be adopted in all large scale sample surveys routinely carried out by Istat (the Italian National Institute of Statistics).</p> <p>System Architecture</p> <p>ReGenesees has a clear-cut two-layer architecture: the application layer of the system is embedded into an R package named ReGenesees. A second R package, called ReGenesees.GUI, implements the presentation layer of the system (namely a Tcl/Tk GUI). Both packages can be run under Windows as well as under Mac, Linux and most of the Unix like operating systems. While the ReGenesees.GUI package requires the ReGenesees package, the latter can be used also without the GUI on top. Thus the statistical functions of the system will always be accessible by users interacting with R through the traditional command-line interface. On the contrary, less experienced R users will take advantage from the user-friendly mouse-click GUI.</p> <p>Main Statistical Functions</p> <p>> Complex Sampling Designs</p>

- Multistage, stratified, clustered, sampling designs
- Sampling with equal or unequal probabilities, with or without replacement
- “Mixed” sampling designs (i.e. with both self-representing and non-self-representing strata)
 - > Calibration
- Global and partitioned (for factorizable calibration models)
- Unit-level and cluster-level weights adjustment
- Homoscedastic and heteroscedastic models
- Linear, raking and logit distance functions
- Bounded and unbounded weights adjustment
- Multi step calibration
 - > Basic Estimators
- Horvitz-Thompson
- Calibration Estimators
 - > Variance Estimation
- Multistage formulation
- Ultimate Cluster approximation
- Collapsed strata technique for handling lonely PSUs
- Taylor linearization of nonlinear “smooth” estimators
- Generalized Variance Functions method
 - > Estimates and Sampling Errors (standard error, variance, coefficient of variation, confidence interval, design effect) for:
 - Totals
 - Means
 - Absolute and relative frequency distributions (marginal, conditional and joint)
 - Ratios between totals
 - Multiple regression coefficients
 - Quantiles
 - > Estimates and Sampling Errors for Complex Estimators
 - Handles arbitrary differentiable functions of Horvitz-Thompson or Calibration estimators
 - Complex Estimators can be freely defined by the user
 - Automated Taylor linearization
 - Design covariance and correlation between Complex Estimators
 - > Estimates and Sampling Errors for Subpopulations (Domains)
 - All the analyses above can be carried out for arbitrary domains

4. Level of importance:	Strategic
5. Input format(s) (e.g. csv, xml,...):	Delimited (csv, txt), RDBMS tables, MS Access tables, MS Excel spreadsheets
6. Output format(s) (e.g. csv, xml,...):	Delimited (csv, txt), RDBMS tables, MS Access tables, MS Excel spreadsheets
7. Programming language(s):	R
8. Code availability:	Open source
9. Charges:	Free of charge
10. Development status:	Production/stable <ul style="list-style-type: none"> • Current Version: 1.7
11. Operating system(s):	Windows, Linux, Mac
12. User/natural language:	English
13. Demo/trial version available?:	Yes

14. Do you provide training and/or consultancy for this software for other organisations?:	Yes
15. Do you provide support for this software for other organisations?:	Yes
16. Does detailed documentation exist for developers?:	
17. Does detailed documentation exist for users of the software?:	Yes
18. In which language(s) is the documentation available?:	English
19. Please provide a link to any documentation available online:	<p>1) ISTAT official website:</p> <ul style="list-style-type: none"> • English http://www.istat.it/en/tools/methods-and-it-tools/processing-tools/regenesees • Italian http://www.istat.it/it/strumenti/metodi-e-strumenti-it/strumenti-di-elaborazione/regenesees <p>2) JOINUP (The European Commission repository for open source software): https://joinup.ec.europa.eu/software/regenesees/description</p>
20. Other documentation (please upload attachments or give details):	<p>1) ISTAT official website:</p> <ul style="list-style-type: none"> • English http://www.istat.it/en/tools/methods-and-it-tools/processing-tools/regenesees • Italian http://www.istat.it/it/strumenti/metodi-e-strumenti-it/strumenti-di-elaborazione/regenesees <p>2) JOINUP (The European Commission repository for open source software): https://joinup.ec.europa.eu/software/regenesees/description</p>
21. Please list other statistical organisations that are known to use this software:	The Scottish Government, ONS
22. Other information:	
23. Is the software compliant with the HLG vision?*	fully
24. In which areas is the software compliant with the HLG compliance criteria?:	capable of being used in 'plug and play' architecture complies with guidelines for multi-lingual applications supports input and output of data & metadata in open format

**Click [here](#) for details of the criteria for compliance with the HLG vision. (Owners of software have the primary responsibility for deciding whether software meets the criteria. However, in cases of disagreement the Sharing Advisory Board will adjudicate.)*

If you are familiar with the phases and sub-processes of the [Generic Statistical Business Process Model](#), please add labels to this page to categorise the software, using the 'Edit labels' option at the bottom left of the screen. Please choose from the existing labels e.g. 'gsbpm4_1' for GSBPM 4.1, 'select sample'. You can view the full list of phases and sub-processes [here](#).

Other users of this software are encouraged to evaluate it and share their experiences using the comment option on this wiki page, or by e-mail to support.stat@unece.org