ANALYSI/STATISTICAL SOFTWARES

1) **R Software**



R is a programming language for statistical computing and graphics supported by the R Core Team and the R Foundation for Statistical Computing. It was created by statisticians Ross Ihaka and Robert Gentleman. The R software is mainly used among data miners, bioinformaticians and statisticians for data analysis and developing statistical software. Users have created packages to augment the functions of the R language.

According to user surveys and studies of scholarly literature databases, R is one of the most commonly used programming languages used in data mining. As of October 2022, R ranks 12th in the TIOBE index, a measure of programming language popularity, in which the language peaked in 8th place in August 2020.

The official R software environment is an open-source free software environment within the GNU package, available under the GNU General Public License. It is written primarily in C, Fortran, and R itself (partially self-hosting). Precompiled executables are provided for various operating systems. R has a command line interface. Multiple third-party graphical user interfaces are also available, such as R Studio, an integrated development environment, and Jupyter, a notebook interface.

R is an open-source implementation of the S programming language combined with lexical scoping semantics from Scheme, which allow objects to be defined in predetermined blocks rather than the entirety of the code. S was created by Rick Becker, John Chambers, Doug Dunn, Jean McRae, and Judy Schilling at Bell Labs around 1976. Designed for statistical analysis, the language is an interpreted language whose code could be directly run without a compiler. Many programs written for S run unaltered in R. As a dialect of the Lisp language, Scheme was created by Gerald J. Sussman and Guy L. Steele Jr. at MIT around 1975.

In 1991, statisticians Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand, embarked on an S implementation. It was named partly after the first names of the first two R authors and partly as a play on the name of S. They began publicizing it on the data archive StatLib and the *s-news* mailing list in August 1993. In 1995, statistician Martin Mächler convinced Ihaka and Gentleman to make R free and open-source software under the GNU General Public License The first official release came in June 1995. The first official "stable beta" version (v1.0) was released on 29 February 2000.

2) SPSS Software

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SPSS Statistics is a statistical software suite developed by IBM for data management, advanced analytics, multivariate analysis, business intelligence, and criminal investigation. Long produced by SPSS Inc., it was acquired by IBM in 2009. Current versions (post 2015) have the brand name: IBM SPSS Statistics.

The software name originally stood for Statistical Package for the Social Sciences (SPSS), reflecting the original market, then later changed to Statistical Product and Service Solutions. SPSS is a widely used program for statistical analysis in social science. It is also used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations, data miners, and others. The original SPSS manual (Nie, Bent & Hull, 1970) has been described as one of "sociology's most influential books" for allowing ordinary researchers to do their own statistical analysis. In addition to statistical analysis, data management (case selection, file reshaping, creating derived data) and data documentation (a metadata dictionary is stored in the data file) are features of the base software. The many features of SPSS Statistics are accessible via pull-down menus or can be programmed with a proprietary 4GL *command syntax language*. Command syntax programming has the benefits of reproducible output, simplifying repetitive tasks, and handling complex data manipulations and analyses. Additionally, some complex applications can only be programmed in syntax and are not accessible through the menu structure. The

pull-down menu interface also generates command syntax: this can be displayed in the output, although the default settings have to be changed to make the syntax visible to the user. They can also be pasted into a syntax file using the "paste" button present in each menu. Programs can be run interactively or unattended, using the supplied Production Job Facility.

Additionally a "macro" language can be used to write command language subroutines. A Python programmability extension can access the information in the data dictionary and data and dynamically build command syntax programs. The Python programmability extension, introduced in SPSS 14, replaced the less functional SAX Basic "scripts" for most purposes, although SaxBasic remains available. In addition, the Python extension allows SPSS to run any of the statistics in the free software package R. From version 14 onwards, SPSS can be driven externally by a Python or a VB.NET program using supplied "plug-ins". (From Version 20 onwards, these two scripting facilities, as well as many scripts, are included on the installation media and are normall y installed by default.)

SPSS Statistics places constraints on internal file structure, data types, data processing, and matching files, which together considerably simplify programming. SPSS datasets have a two-dimensional table structure, where the rows typically represent cases (such as individuals or households) and the columns represent measurements (such as age, sex, or household income). Only two data types are defined: numeric and text (or "string"). All data processing occurs sequentially case-by-case through the file (dataset). Files can be matched one-to-one and one-to-many, but not many-to-many. In addition to that cases-by-variables structure and processing, there is a separate Matrix session where one can process data as matrices using matrix and linear algebra operations.



3) UPLC

The software is used for estimation of amino acid vitamin and mycotoxin

4) ICP-OES

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The software is used for estimation of minerals

5) Ex Pharm



6) MUSICA



The software is used for acquisition workstation- transfer of image from digitizer to computer & editing of image for radiograph

7) Bio analyser



The software is used for estimation of different enzymes present in serum (Liver Function Test, Kidney Function Test, Lipid profile test etc.)

8) Statistical Tools for Agricultural Research

Descriptive Statistics: MasterData.csv		Descriptive Statistics: MasterData.csv
Variable Description Statistics		Variable Description Statistics
Others No. of Obs. No. of Non-missing Obs No. of Missing Obs. Sum of Values Corrected Sum of Squares Uncorrected Sum of Squares Standard of Error of Skewness Standard Error of Skewness	Central Tendency Ø Mean Median Location Ø Minimum Ø Maximum 1st Quartile 3rd Quartile	Numeric Variable(s) V1 V2 Add
Dispersion Range Trterquartile Range Variance Standard Deviation Standard Error of the Mean Coefficient of Variation	Distribution Skewness Kurtosis Uncheck All Check All Defaults	Set to Factor Factor(s) By Variable(s) SITE GEN REP Add
Reset	OK Cancel	Reset OK Cancel

Statistical Tool for Agricultural Research (STAR) is a computer program for data management and basic statistical analysis of experimental data. It has a user-friendly graphical interface where items are accessible via drop-down menus. Its graphical interface was created using the Eclipse Rich Client Platform (RCP) and uses the R language and environment for statistical computing and graphics.



Thermo-Scanlt Software 6.1 for Microplate Reader



NuGenius Software for Geldoc Image Analysis



Students Using Statistical Analysis Software



Teacher teaching students about the use of Statistical Software