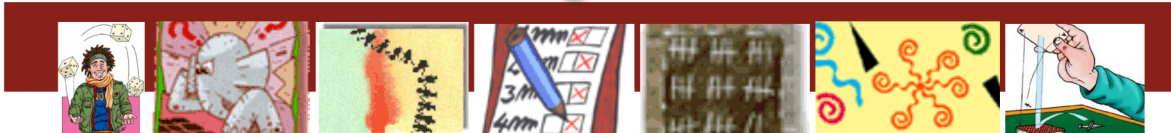




A PLACE TO
UNDERSTAND
NUMBERS

www.alea.pt

A walk through our website





WHY ALEA?

To understand the meaning of a text we need to be able to do more than just spell out the words it contains, we need to call on many other resources.

In the same way, when we “read” statistical information we need to understand certain concepts, terminologies and methodologies used in its preparation.

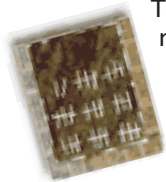
The project “ALEA – ACÇÃO LOCAL DE ESTATÍSTICA APLICADA” (Local Applied Statistics Action) was set up for the specific purpose of providing tools related to understanding, using and teaching statistics. The project is aimed essentially at secondary school teachers and pupils. ALEA is thus an instrument for promoting statistical literacy. But it is also an important resource for supporting interdisciplinary projects and consequently can be of benefit to many other groups of people.

ALEA arose from a partnership between the Tomaz Pelayo Secondary School and Statistics Portugal, which were joined later by the Northern Regional Education Department. The project operates mainly through web pages, with the publishing of various types of content, but ALEA also has a “distance learning” component, with regular e-learning courses.

The aim of this brochure is to present the English version of ALEA and also the project as a whole.

AREAS IN THE ENGLISH VERSION OF ALEA

STATISTICAL CONCEPTS



This area presents the concepts needed for learning about statistics, illustrated with examples.

The layout follows the programme approved by the



The median weight of these athletes is 75kg, but the mean weight is 105kg !

$$\bar{X} = \frac{\sum_{i=1}^n x_i}{n}$$

Ministry of Education and is divided into the following chapters: "Introduction to Statistics", "Data, tables and graphs", "Location Measurements", "Dispersion Measurements", "Bi-dimensional Distributions" and "Exercises".

3

EDUCATIONAL DOSSIERS



Four dossiers on matters of interest connected to statistics are presented, in a simple yet substantial manner:

Statistical Surveys

An introduction to drafting questionnaires, sampling, and organising and displaying results.

Notes on the History of Statistics

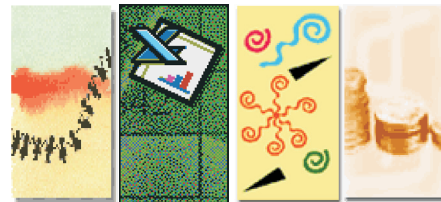
An overview of some of the most important moments in statistics and its history, from the ancient civilisations to the present day.

Graphical Representations

How to produce a chart or a map that really provides information and is, at the same time, appealing, legible and data-coherent.

The Cinema in Numbers

A look at the history of Cinema, accompanied by relevant statistical data.



HAVING FUN WITH STATISTICS

Educational games and moreover humorous cartoons to stimulate the study of statistics and the liking for searching for statistical information:



Trivial Statistics – While “playing”, users are invited to explore the statistical information universe on different subjects (Population, Health, Education and training, Labour market, Living

conditions and welfare, Tourism, Economy and finance, Industry, trade and services, Agriculture and fisheries, External trade, Environment and energy, Science and technology);

The Hangman – To guess statistical terms written with words hidden by a symbol, clicking over the set of letters;

Memory Game – Finding groups of equal images, in four difficulty levels.



NAMES & DATES IN STATISTICS

Information on facts and people that contributed to the evolution of Statistics.

GLOSSARY

Every page on the web-site has a link to the statistics glossary where definitions can be found for more than a hundred terms, such as: “sample”, “population”, “box plot”, “standard deviation”, “estimate”, “family”, “average”, “mode”, “median”, etc...

PORTUGAL IN FIGURES

Main general figures published last year about our territory, population, economy, education, industry, agriculture and so on.

YOUR SURROUNDINGS

Statistical information by region, municipality and parish by searching on a map. Various statistical indicators are presented – “Resident population”, “Number of families”, “Number of buildings” and “Illiteracy rate” – for each geographic unit selected on the map (data collected in the last census – 2001).

OTHER AREAS OF ALEA

(only in Portuguese version)



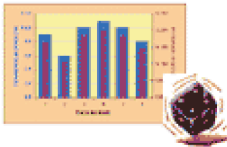
PROBABILITY CONCEPTS

This area uses interactive environments to support the study of probabilities. After an explanation of

introductory concepts given in a chapter entitled “Random events”, the throwing of a dice is simulated and the concepts of “event” and “operations with events” are presented using animations.



“Probability Distributions” are then explained and, after a set of exercises, the course ends with the chapter entitled “Simulation of Probabilities”.



DOSSIERS & RESOURCES

This space has been designed to support the preparation of teaching materials on a variety of subjects, to support classes in mathematics, geography, social sciences, economics and others, and contains the following:

- **Introductory course on statistical inference,**

which tackles the concepts needed to be able to interpret and understand, in a straightforward way, certain types of information carried by the media, for example: opinion polls. The concepts covered correspond to those in social sciences applied mathematics programmes.



- **BibliotecALEA:** assorted references for supporting teaching and learning about statistics (book suggestions, magazines, web-sites, articles, CD's, etc.).



- **Activity files (ActivALEA)** with exercises, notes, observations, comments and proposals aimed at systemising basic statistical training (at an elementary

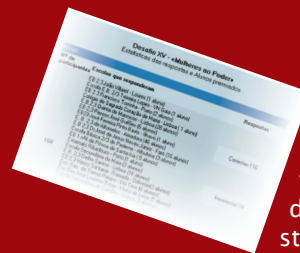
level);

Examples: “Population, sample and descriptive statistics”, “Association between qualitative variables – Simpson’s paradox”, “Is a graph worth more than a thousand words?” and “Association between quantitative variables: the correlation coefficient”.

- Educational dossiers

on some matters of interest connected to statistics, presented in a simple yet substantial manner.

Examples: “Population and demographics”, “Consumer price index”, “Statistics with Excel”, “Probabilities with Excel”, “Presentations with Graphs”, “Statistical Surveys”, “Statistical Software”...



ALEA CHALLENGES

Everyday problems put to pupils in order to develop their liking for statistics. These problems are based on news

stories published in newspapers and magazines and there are prizes for the best replies.

Each challenge has 2 levels.

Level 1 is for students up to the 3rd cycle of schooling (9th year) while level 2 is for students in the secondary education (12th year).



STATISTICS IN THE HEADLINES

References to news items published in the press which contain statistical data. These news items are complemented with other useful information for understanding the subject in question.



FACTS IN NUMBERS

Area leading to several places on ALEA with different types of statistical information, such as:

- **Portuguese speaking countries:**
Major indicators for each of the countries where Portuguese is the official language. The countries can be chosen from a world map.
- **You also count:**
Area informing pupils about censuses – what they are, what they are used for and how they are carried out.

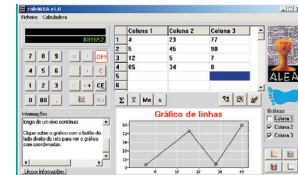


INTERESTING NUMBERS

In this area, special attention is given to some interesting figures such as: “Municipalities with the largest number of residents”, “Greatest population densities”, etc.

CALCULATOR (CALCALEA)

On all of the ALEA pages, users can access this “tool” which allows them to calculate some descriptive measures (average, median, standard deviation) and to make four types of graph: bar charts, histograms, point clouds, and line charts. The calculator also includes an information box which explains the results obtained. The CalcALEA can be downloaded.



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