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## WinEpi 2.0: A collaborative website for development of epidemiological tools

### Abstract

WinEpi is the development of a project originally based on a MS-DOS software called **Episcope**, programmed in 1990 by Klaas Frankena and Jacob Otto Goelema (Agricultural University, Wageningen, The Netherlands). Episcope is based on the spreadsheet program Supercalc version 4, and consists of four modules, each module comprising a number of programs. The modules deal with the evaluation of diagnostic tests, sample size calculations, the analysis of cohort and case control studies, and models (Frankena et al, 1990).

From 1997 to 2000, as part of PhD Thesis of Ignacio de Blas, granted by Government of Aragón, two new applications were developed based on Episcope: **Win Episcope** and **WinEpi Ratios**, and they were developed with Borland Delphi 5.0 for Microsoft Windows. New graphics features and functions were included, mostly related with disease measurements (Thrusfield et al, 2001, Ortega et al, 2001).

The constant evolution of operating systems produced several problems with these local applications. For this reason, in 2005, we were forced to implement with Microsoft ASP a web version **WinEpi 1.0** (acronym of Working in Epidemiology), as a further development of Win Episcope 2.0, and WinEpi Ratios 2.0. With the acquired experience of these applications, we decided to design a new application taking account the next basic requirements: easy distribution and update procedures, free access and independence from operative system. In this new version some additional tools for basic statistical calculations were included (de Blas et al, 2006).

Now we introduce **WinEpi 2.0**, which it has been implemented in a web server using PHP and MySQL in order to improve functionality and cooperative features. WinEpi 2.0 has been designed as a cooperative platform in order to provide epidemiological tools to scientific and academic community. For this reason it is important to strengthen the self-learning ability including with step-by-step guidelines and solved examples. Functions and examples will be available in different languages and everybody could submit proposal to implement new formulae, to suggest examples and to collaborate as translators. The temporary URL of the website of the project is <http://www.winepi.net/WINEPI2> (currently is in beta-tester stage).

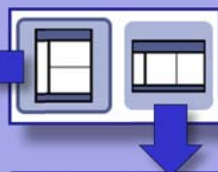
Our philosophy is that copyright of all material belongs to contributors, that share them with the community under Creative Commons licence, and contributors who want to contribute to new WinEpi can ask for being included in the Contributors database.



### New Interface (Adapted to the new devices)



Access to WinEpi 2.0  
<http://www.winepi.net/WINEPI2>



### Contributors: Join to the project



### More detailed helps & examples

**Basic help**  
Sometimes you need to know if there are diseased (or infected) individuals in a population. When a disease is present in a population it is expected to find a proportion of diseased individuals (prevalence), and the aim is to select a sample that allows us to find at least one of these diseased individuals.

**Advanced help**  
The needed sample size to determine if disease is present in a population, depends on the desired confidence level (usually 95%), the population size and the minimum number of diseased individuals that you expect that there are in the population. In order to calculate it we will use the following formula:

$$n = (1 - CL)^{\frac{1}{N}} \cdot (N - \frac{d-1}{2})$$

where:  
n: required sample size

**Example**  
To perform an export program of boars for artificial insemination, a farm wants to know if the Aujeszky virus (AD) is present in its facilities, as the destination country requires uninfected animals to be imported.  
The farm has 2000 pigs and wants to determine, with a 95% confidence level, whether there is infection on the farm.  
The vet has reviewed the literature to determine the expected prevalence of AD with which to work, and has seen that the mean prevalence of infected farms is between 10 and 15%.

Consequently the data necessary for the problem are:  
CL: confidence level = 95%  
N: population size = 2000  
P: min. minimum expected prevalence = 10%

**References**

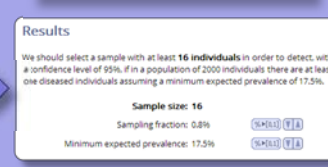
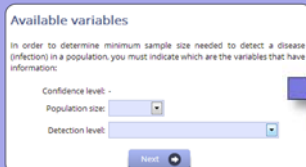
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This is an open tool for epidemiological calculations, with a more comprehensive interface. All modules have three steps:

1. **Introduction**: basic concepts related with the target of the module and the data needed to further calculations.
2. **Data gathering**: collection of data needed for calculations.
3. **Results**: data used for calculations and results with a customized explanation in order to make easy and understandable.

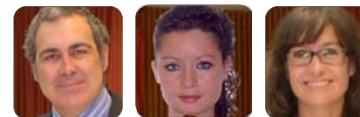
### Itemized menu

- Sample size
- Detect disease (random sampling & perfect diagnostic)
- Estimate mean (Normal distribution)
- Estimate mean (Poisson distribution)
- Estimate proportion (random sampling & perfect diagnostic)
- Differences between proportions
- Sampling method
- Diagnostic
- Disease measures
- Basic statistics



### References

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