

Hellenic Complex Systems Laboratory

Exact Confidence Intervals for a Single Proportion

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Exact Confidence Intervals for a Single Proportion

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Search Terms: proportion, confidence interval, exact method, F distribution, inference

Short Description of the Demonstration

This Demonstration shows calculations of point estimations and confidence intervals for various single proportions of populations obeying a condition (or trait), as well as their plots versus p -value. This is done for differing populations obeying and violating a condition (or trait) and differing p -values for estimating the lower and upper bounds of the confidence intervals.

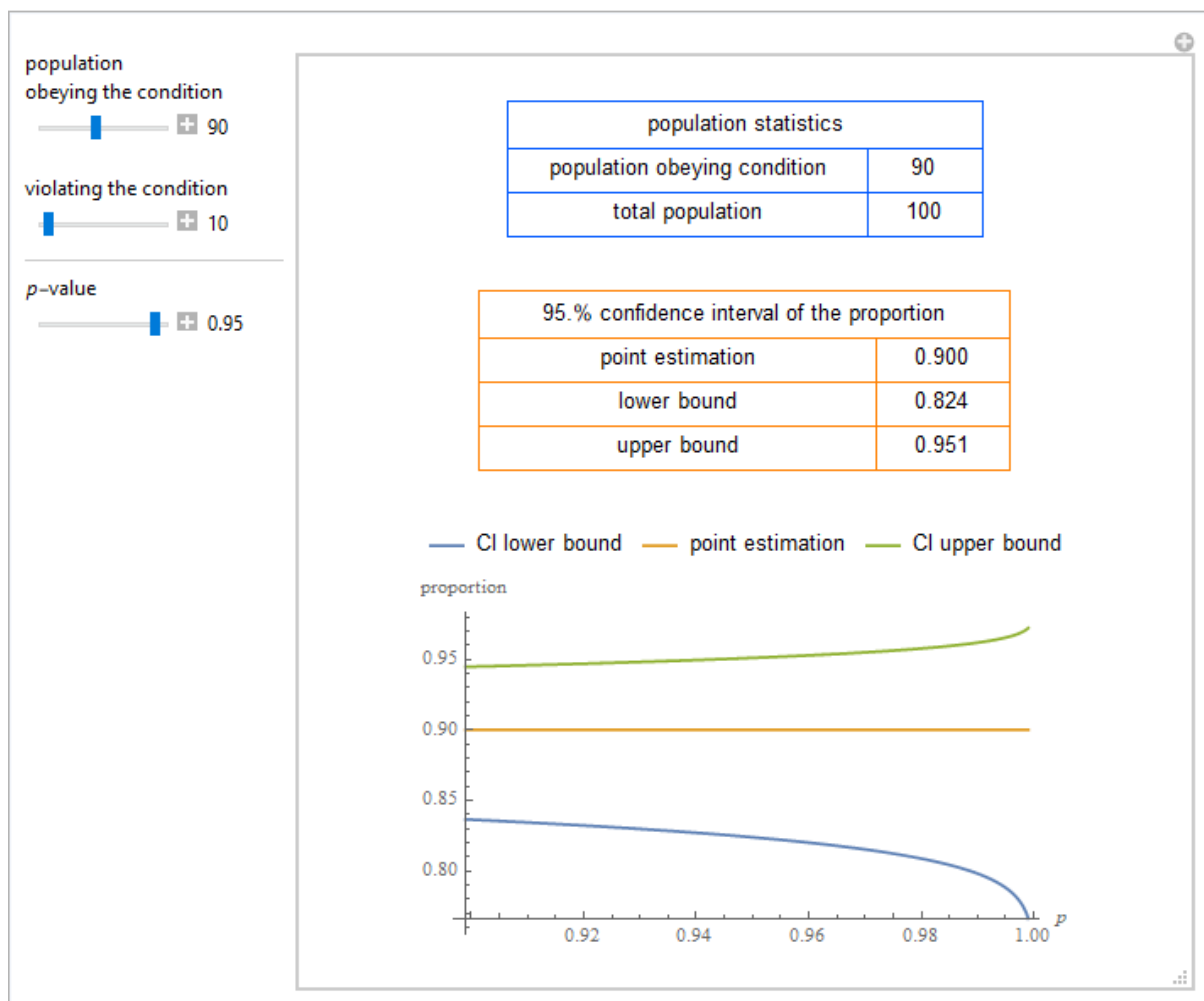


Figure 1: Population statistics, point estimation, and 95% confidence interval for a single proportion of a population obeying a condition, as well as their plots versus p -value, with the settings shown at the left.

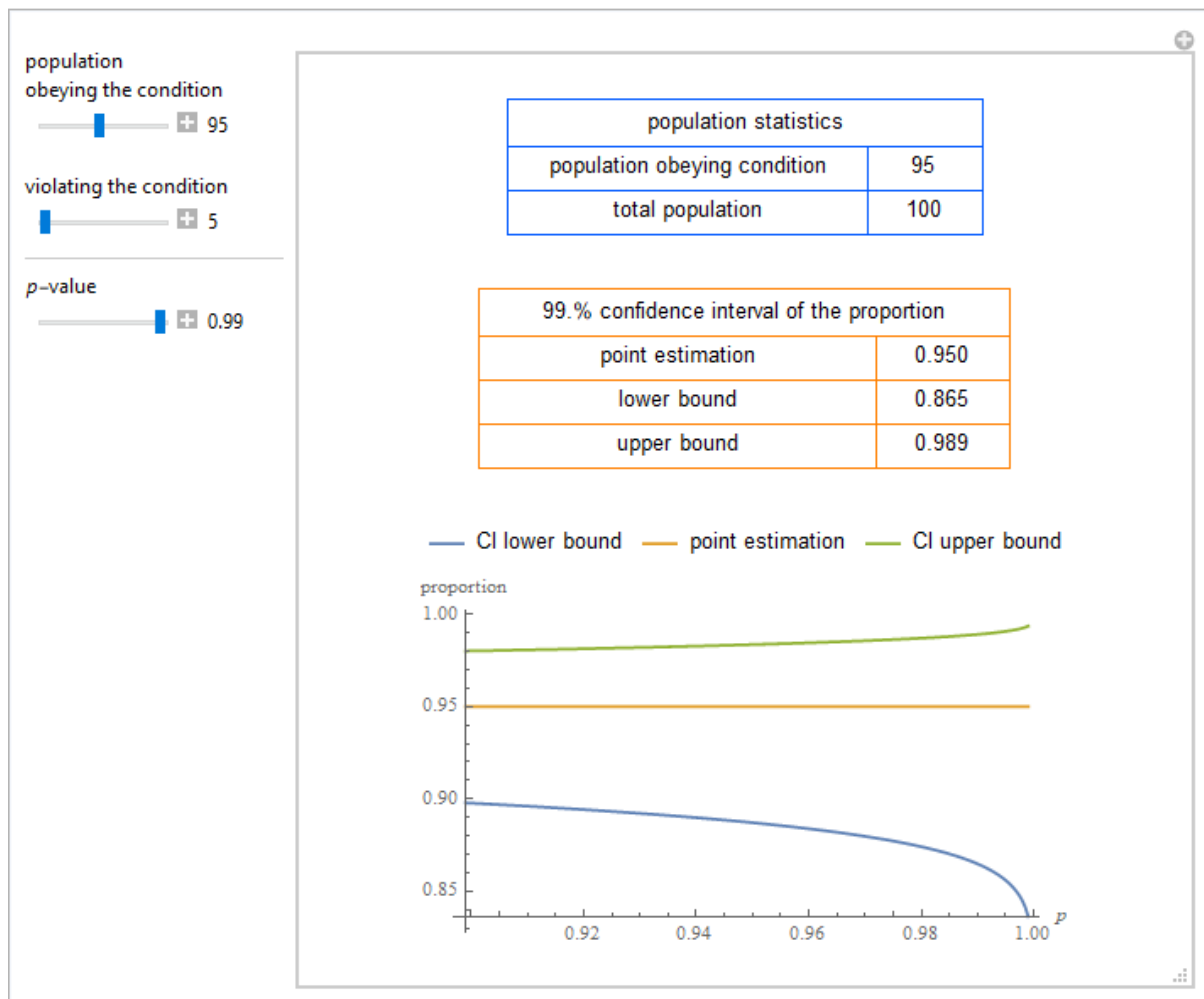


Figure 2: Population statistics, point estimation, and 99% confidence interval for a single proportion of a population obeying a condition, as well as their plots versus p -value, with the settings shown at the left.

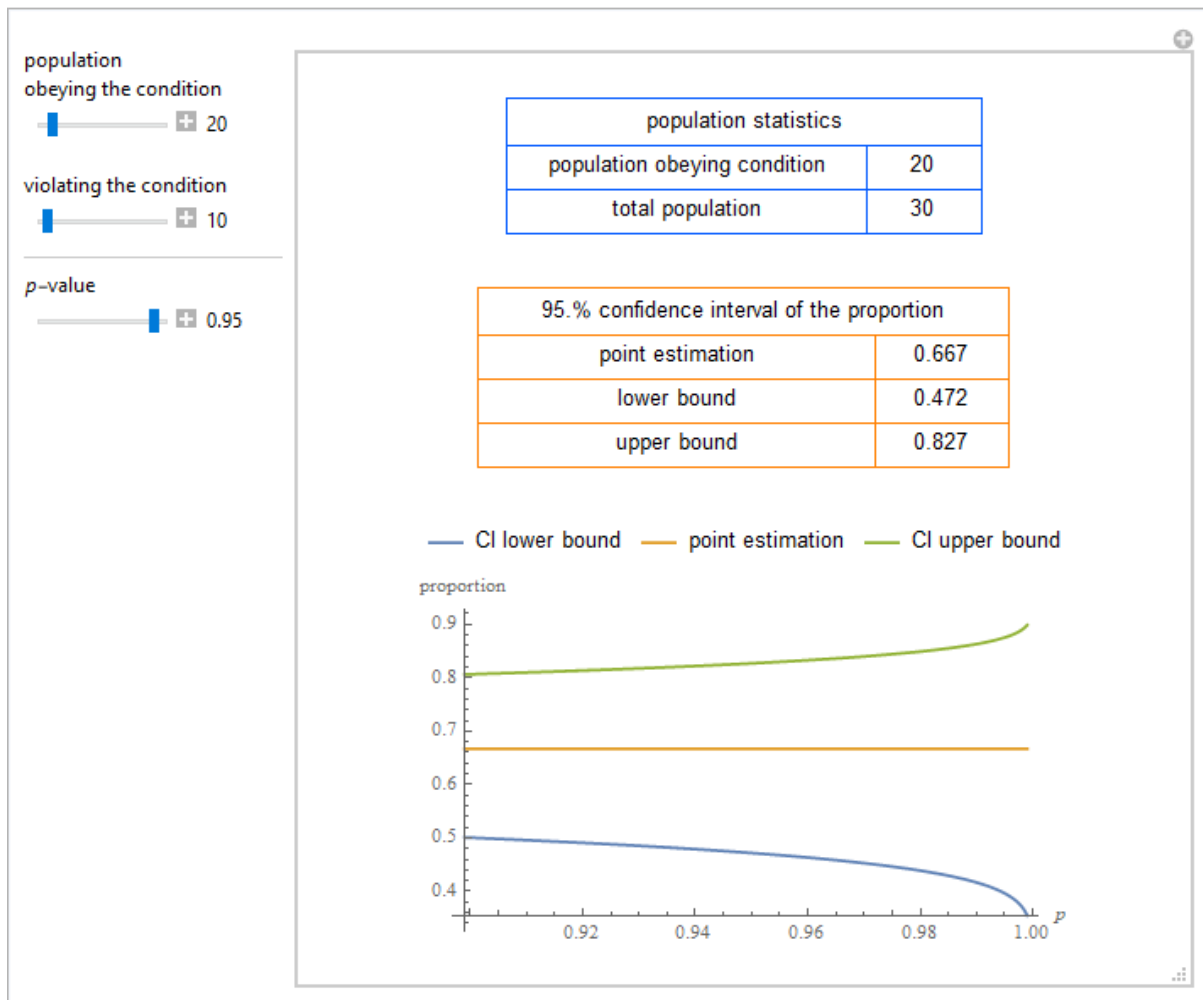


Figure 3: Population statistics, point estimation, and 95% confidence interval for a single proportion of a population obeying a condition, well as their plots versus p -value, with the settings shown at the left.

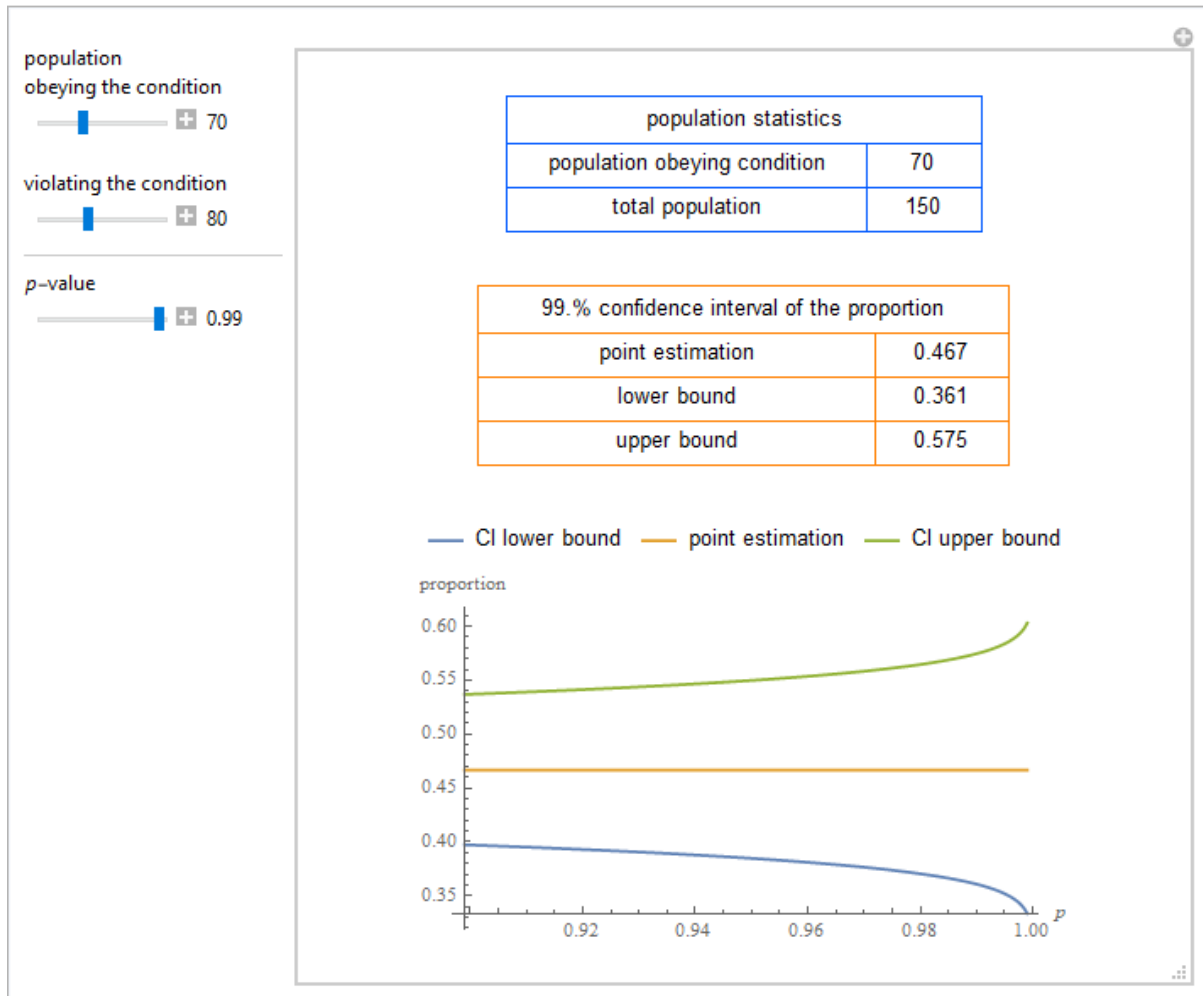


Figure 4: Population statistics, point estimation, and 99% confidence interval for a single proportion of a population obeying a condition, as well as their plots versus p -value, with the settings shown at the left.

Details

The exact method using the F -distribution is applied for calculating the confidence interval of each single proportion [1].

Reference

[1] J. L. Fleiss, B. Levin and M. C. Paik. Statistical Methods for Rates and Proportions, 3rd ed., Hoboken, NJ: J. Wiley, 2003.

Source Code

Programming language: Wolfram Language

Availability: The updated source code is available at:

<https://www.hcsl.com/Tools/Demonstrations/ExactConfidenceIntervalsForASingleProportion.nb>

Software Requirements

Operating systems: Microsoft Windows, Linux, Apple iOS

Other software requirements: Wolfram Player®, freely available at: <https://www.wolfram.com/player/> or Wolfram Mathematica®.

System Requirements

Processor: x86-64 compatible CPU.

System memory (RAM): 4GB+ recommended.

Permanent Citation:

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