

# Una mirada a l'estadística: la investigació (una visió personal)

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La investigació metodològica en Estadística és molt important per a l'avanç de totes les ciències.

-Una part de la investigació metodològica té un impacte directe molt gran.

-Una altra part enriqueix el “coneixement intern”, els fonaments de la Estadística Matemàtica.

**Són els engranatges d'una gran maquinària.**



Un parell dels articles d'investigació metodològica més citats:

**-Nonparametric Estimation from Incomplete Observations.**

E. L. Kaplan and Paul Meier (1958)

J. of the American Statistical Assoc. 53:282, p. 457-481

Times Cited: 37.807 687/any (669 al 2013)

**-Regression Models and Life Tables.**

D.R. Cox (1972)

J Royal Stat Soc Series B, 34:2, 187-220

Times Cited: 27.680 675/any (635 al 2013)

**-Ryan, T.P. and Woodall, W.H. (2005) The Most-Cited Statistical Papers. Journal of Applied Statistics, 32:5, p. 461-474**

**-Garfield, E. (1990) The most-cited papers of all time, SCI 1945–1988. Part 1A. Current Comments, 7, pp. 3–14.**

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## International Statistical Institute (ISI)

### 2013 Karl Pearson Prize

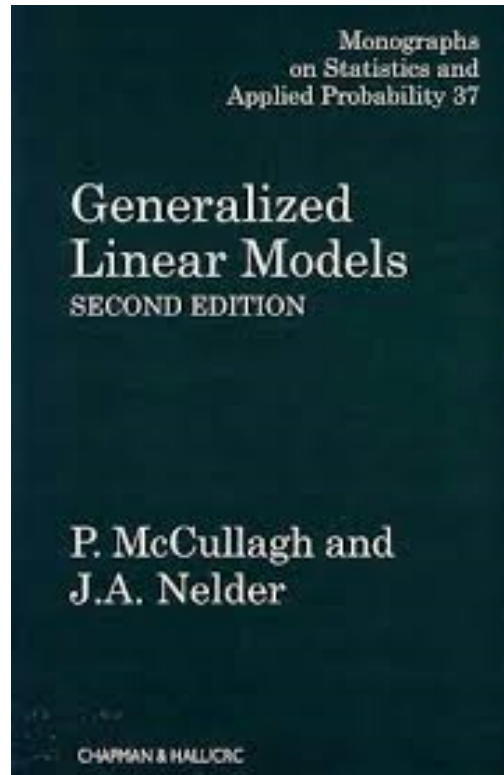
The ISI's Karl Pearson Prize was established in 2013 to recognize a contemporary a research contribution that has had profound influence on statistical theory, methodology, practice, or applications. The contribution can be a research article or a book and must be published within the last three decades. The prize is sponsored by Elsevier B.V.

**The inaugural Karl Pearson Prize is awarded to Peter McCullagh and John Nelder[1] for their monograph Generalized Linear Models (1983).**

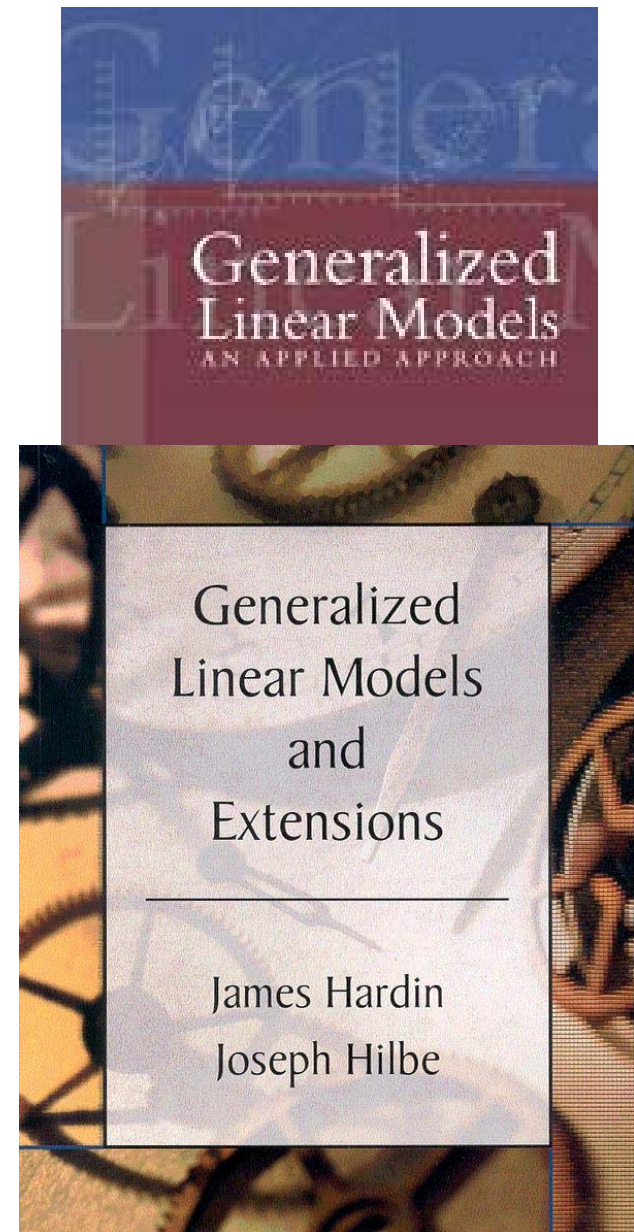
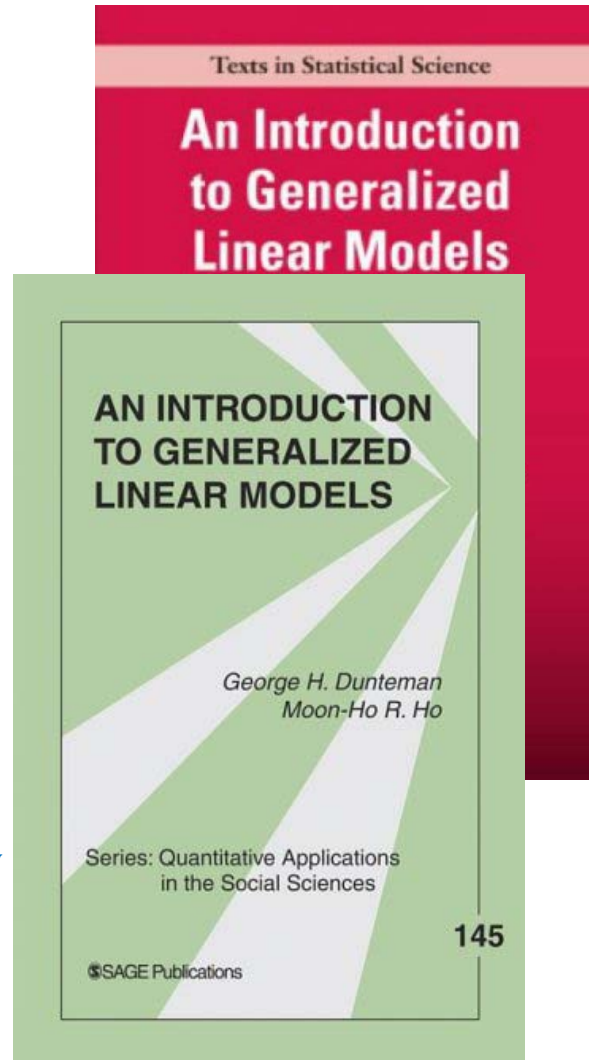
This book has changed forever teaching, research and practice in statistics. It provides a unified and self-contained treatment of linear models for analyzing continuous, binary, count, categorical, survival, and other types of data, and illustrates the methods on applications from different areas. The monograph is based on several groundbreaking papers, including "Generalized linear models," by Nelder and Wedderburn, JRSS-A (1972), "Quasi-likelihood functions, generalized linear models, and the Gauss-Newton method," by Wedderburn, Biometrika (1974), and "Regression models for ordinal data," by P. McCullagh, JRSS-B (1980). The implementation of GLM was greatly facilitated by the development of GLIM, the interactive statistical package, by Baker and Nelder. In his review of the GLIM3 release and its manual in JASA 1979 (pp. 934-5), Peter McCullagh wrote that "It is surprising that such a powerful and unifying tool should not have achieved greater popularity after six or more years of existence." The collaboration between McCullagh and Nelder has certainly remedied this issue and has resulted in a superb treatment of the subject that is accessible to researchers, graduate students, and practitioners.

**The prize will be presented on August 27, 2013 at the ISI World Statistics Congress in Hong Kong and will be followed by the Karl Pearson Lecture by Peter McCullagh.**





Times Cited: 23.612 787/any



- Molecular Structure of Nucleic Acids: A Structure for Deoxyribose Nucleic Acid.

J. D. Watson and F. H. C. Crick. (1953)

Nature, 171:4356, p.737-738

Times Cited: 4.953



-Zur Elektrodynamik bewegter Körper.

A. Einstein (1905)

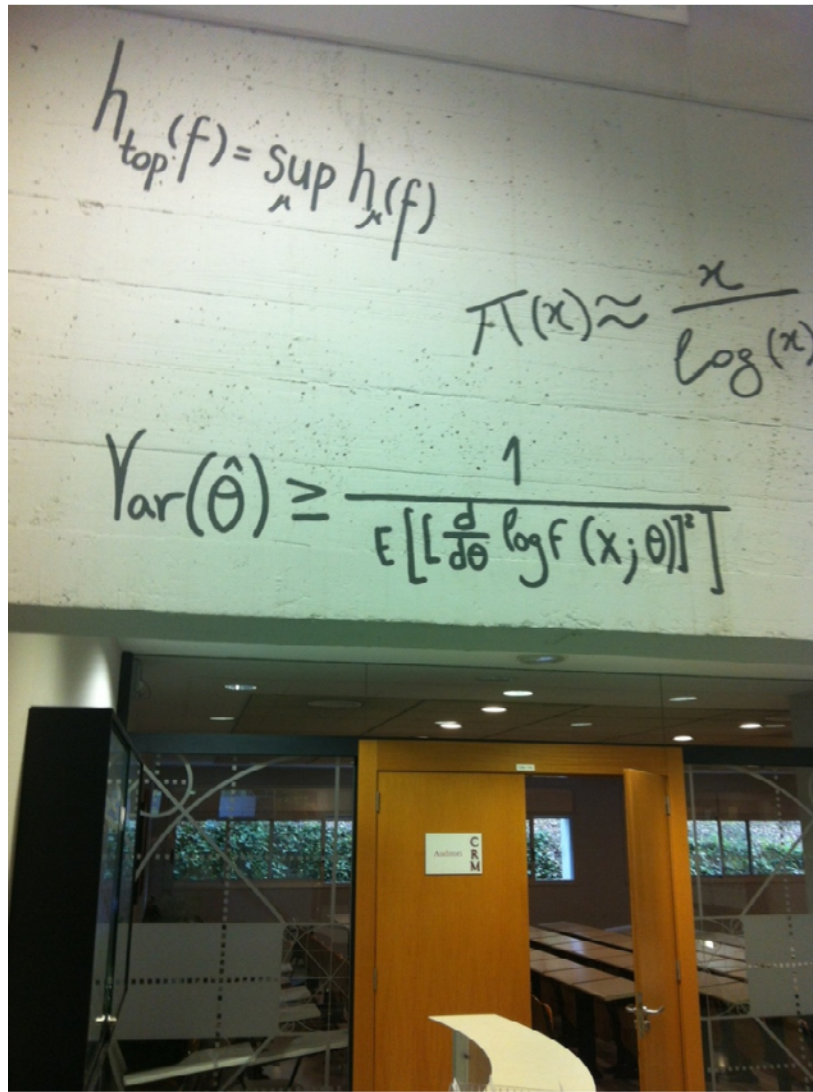
Annalen der Physik, 17, p. 891-921

Times Cited: 1.341



El nombre de cites que té un article és un fenomen que no és fàcil d'analitzar.

## La Cota de Cramér-Rao: un “engranatge” important



Cramér, Harald (1946).  
*Mathematical Methods of Statistics*.  
Princeton, NJ: Princeton Univ. Press

Rao, C.R. (1945).  
Information and the accuracy  
attainable in the estimation of  
statistical parameters.  
*Bulletin of the Calcutta Mathematical  
Society* **37**: 81–89.

- La CCR respon a la pregunta, com de bo pot ser l'estimador d'una magnitud estadística ?
- La CCR imposa una limitació: no podem anar més enllà que el valor marcat per la cota.

**És una veritat o principi “universal”**

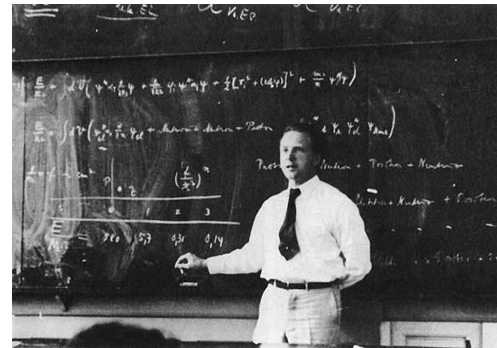
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## El principi d'incertesa de Heisenberg (1927)

No es pot conèixer, alhora i amb total precisió, el valor de la posició i el moment d'una partícula.

$$\sigma_r \sigma_p \geq \frac{h}{4\pi}$$



El principi d'incertesa de Heisenberg es pot deduir a partir de la Cota de Cramér-Rao.

**Stam, A.J. (1959), Some inequalities satisfied by the quantities of information of Fisher and Shannon. *Information and Control* 2, p. 101-112.**

Gràcies per la vostra atenció !

