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**On the asymptotic normality of the  $L_1$ - and  $L_2$ -errors in histogram density estimation.**  
(English) [Zbl 0816.62037](#)  
Can. J. Stat. 22, No. 3, 309-318 (1994).

Summary: The  $L_1$ - and  $L_2$ -errors of the histogram estimate of a density  $f$  from a sample  $X_1, X_2, \dots, X_n$  using a cubic partition are shown to be asymptotically normal without any unnecessary conditions imposed on the density  $f$ . The asymptotic variances are shown to depend on  $f$  only through the corresponding norm of  $f$ . From this follows the asymptotic null distribution of a goodness-of-fit test based on the total variation distance, introduced by *L. Györfi* and *E. C. van der Meulen* [Nonparametric functional estimation and related topics, NATO ASI Ser., Ser. C 335, 631-645 (1991; [Zbl 0727.62053](#))]. This note uses the idea of partial inversion for obtaining characteristic functions of conditional distributions, which goes back at least to *M. S. Bartlett* [J. Lond. Math. Soc. 13, 62-67 (1938; [Zbl 0018.22503](#))].

**MSC:**

[62G20](#) Asymptotic properties of nonparametric inference  
[62G07](#) Density estimation  
[62H12](#) Estimation in multivariate analysis

Cited in **1** Review  
Cited in **15** Documents

**Keywords:**

density estimation; central limit theorem; asymptotic normality; histogram estimate; cubic partition; asymptotic variances; asymptotic null distribution; goodness-of-fit test; total variation distance

**Full Text:** [DOI](#)

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