How can I test for equality of distribution?

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Testing for equality of distribution is a statistical method used to determine if two or more sets of data are drawn from the same population or have similar distribution patterns. This can be done by comparing the means, variances, and shape of the distributions. Various statistical tests, such as the Kolmogorov-Smirnov, Chi-Square, and Anderson-Darling tests, can be used to evaluate the equality of distribution. These tests help to assess if the observed differences between the distributions are due to chance or if there is a significant difference. Overall, testing for equality of distribution is a crucial step in data analysis, as it allows for accurate comparisons and conclusions to be drawn from the data.

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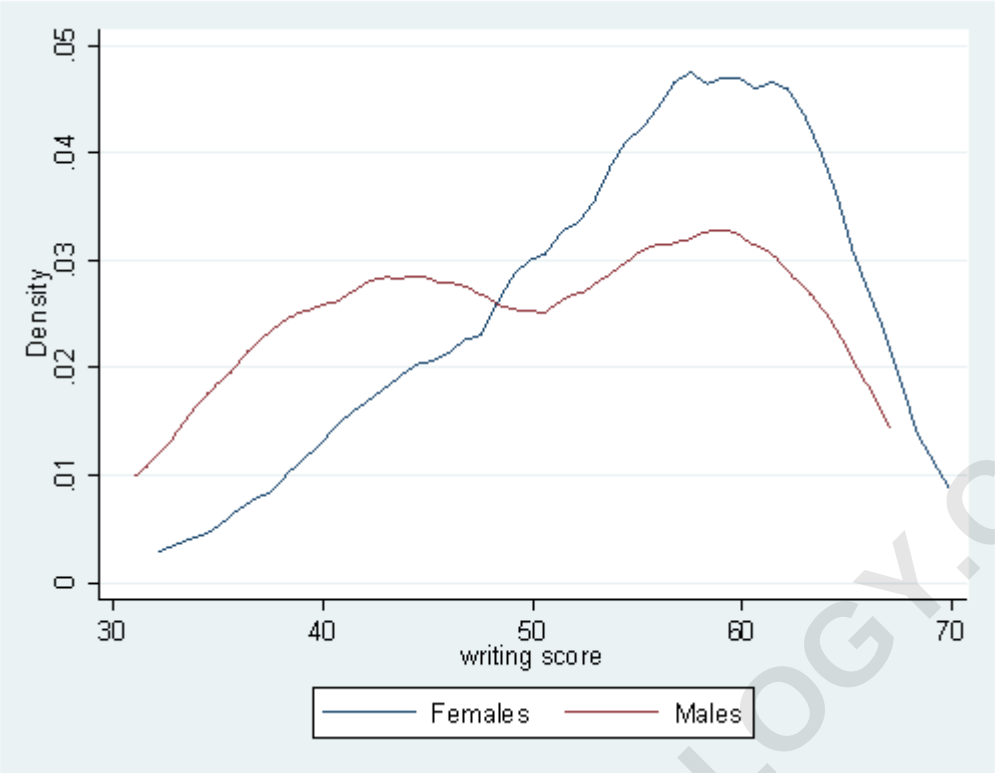
**An alternative test to the classic t-test is the Kolmogorov-Smirnov
test for equality of distribution functions. In a simple example, we'll see if the distribution of writing test scores
across gender are equal using the High-School and Beyond 2000 data set. We'll
first do a kernel density plot of writing scores by gender.**

```
use https://stats.idre.ucla.edu/stat/stata/notes/hsb2, clear

kdensity write if female == 1, plot(kdensity write if female == 0) ///
legend(label(1 "Females") label(2 "Males") rows(1))
```



ksmirnov write, by(female)

Two-sample Kolmogorov-Smirnov test for equality of distribution functions:

Smaller group D P-value Corrected

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male: 0.2468 0.002

female: 0.0000 1.000

Combined K-S: 0.2468 0.005 0.003

From the test, it is apparent that the writing scores

across gender do not have have the same distribution function.