

Kernel Density Estimators

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September 20, 2014

We will be exploring the performance of kernel estimators on the distribution shown in figure 1.

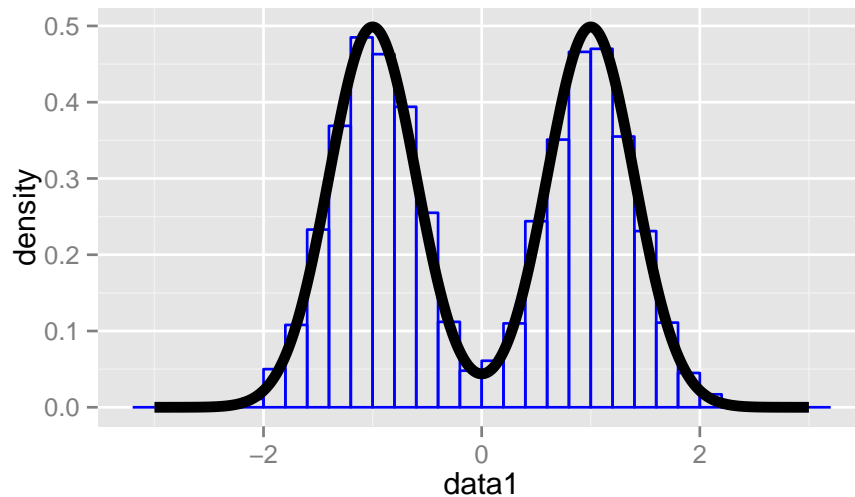


Figure 1: Raw data from a point mixture of normals

For all tasks, include a little text in this document about what you are doing. When you're done, you'll have an R library and knitted pdf document.

TASK 1: Complete the Kernel function and plot it.

TASK 2: Complete the EstimateDensity function and try fitting it to your data with some different bandwidths.

```
## [1] 5000
```

TASK 3: Complete the PerformSimulations function and make plots of the bias and variance.

TASK 4: Explore how the bias and variance changes as a function of the bandwidth.

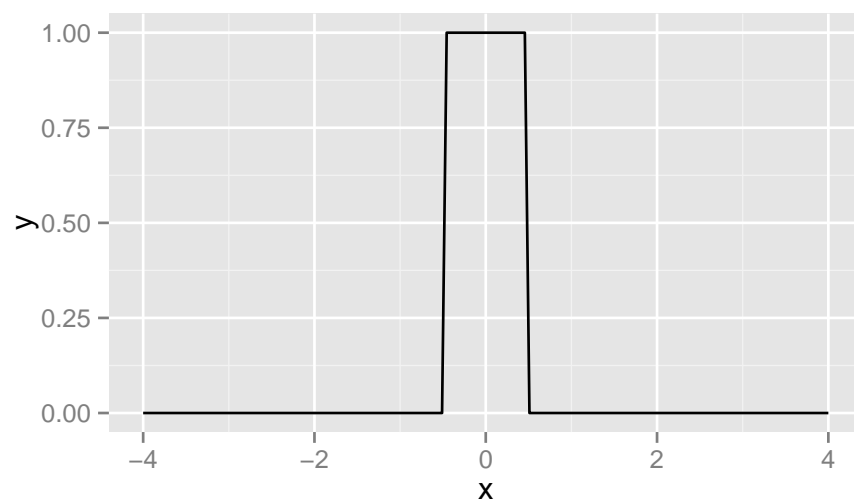


Figure 2: The raw kernel

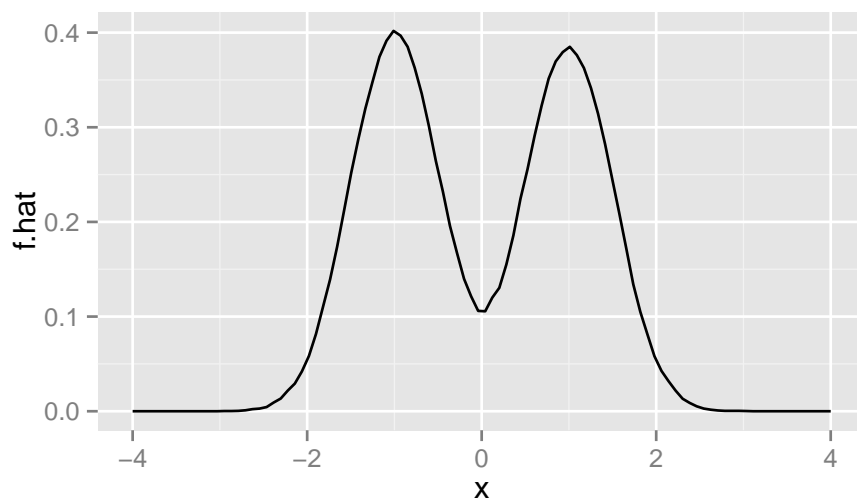


Figure 3: Applying the kernel to the data

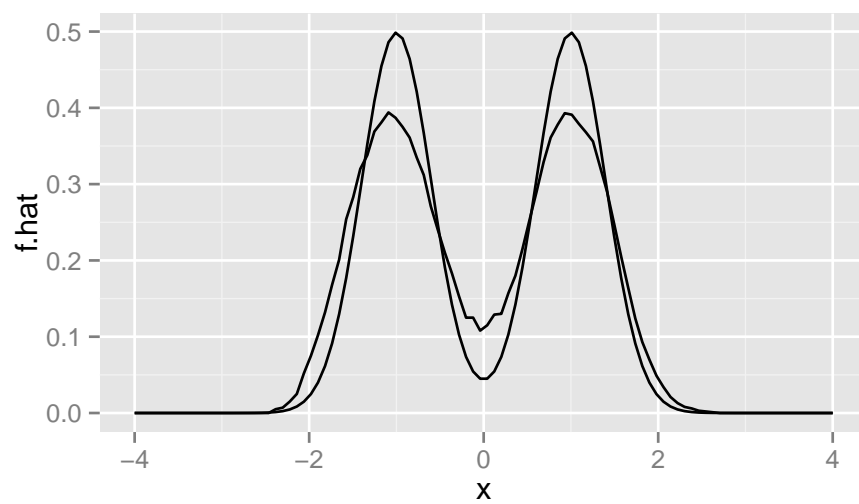


Figure 4: Proof of concept!

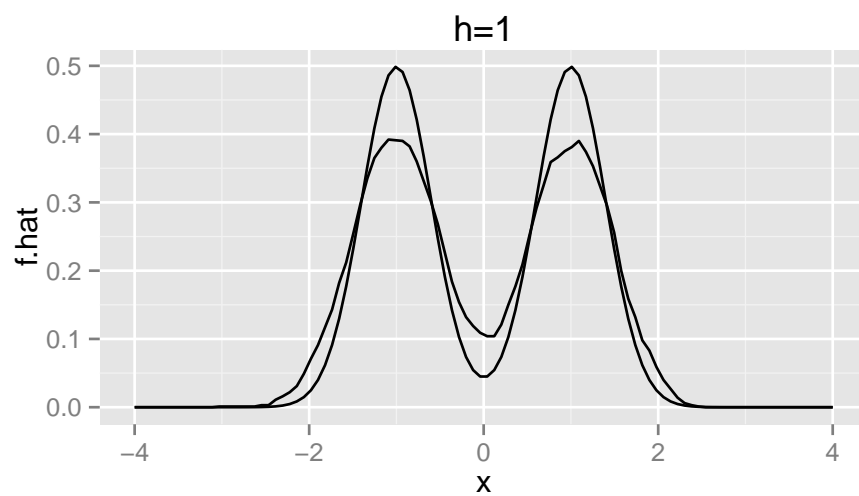


Figure 5: Exploring bandwidths

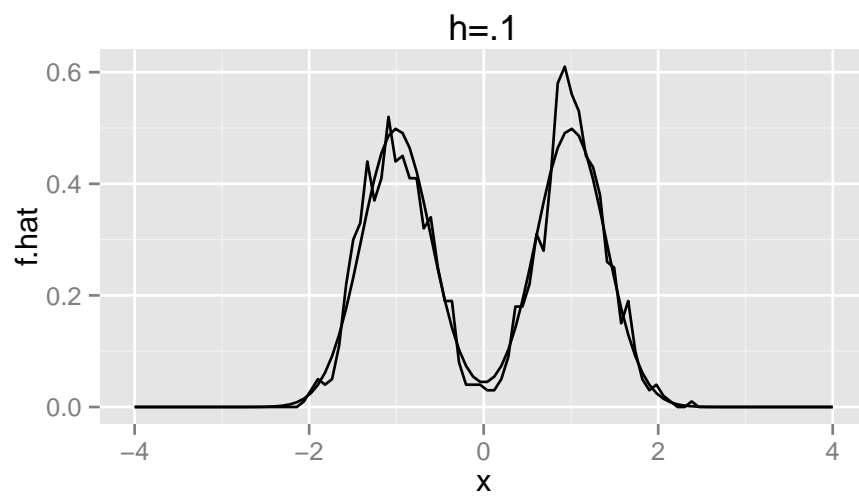


Figure 6: Exploring bandwidths

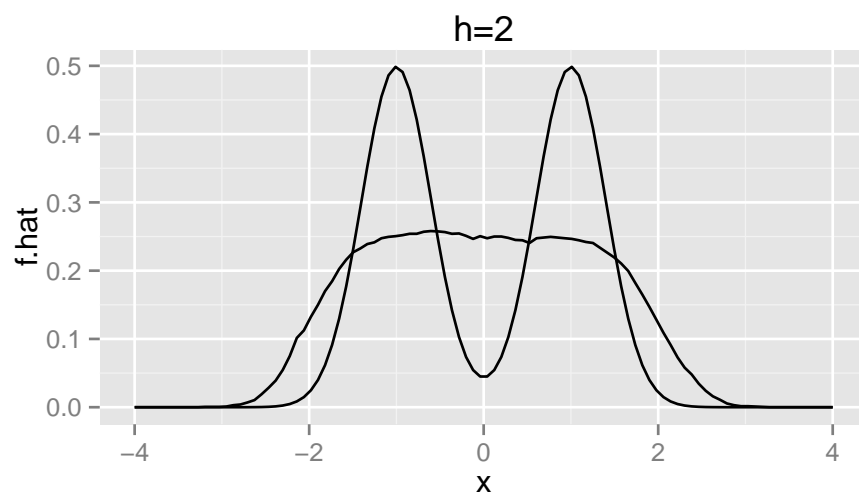


Figure 7: Exploring bandwidths