8/25/2020

Figure 1: $y = x^4$ with sd = 100
Figure 2: y = sin(x) with sd = 1

- The optimal bandwidth does not have the lowest MSE due to the tail behavior (plot 2)
- The lowest MSE is given when bandwidth = 10^{-1}. Compare this with the optimal curve
- Compare the simulated MSE with the theoretical MSE (Simulation L = 100000, bandwidth = 0.1)
- Find some symmetric pattern in the MSE difference (diff = simulated MSE - theoretical MSE)
- Simulated MSE < Theoretical MSE?

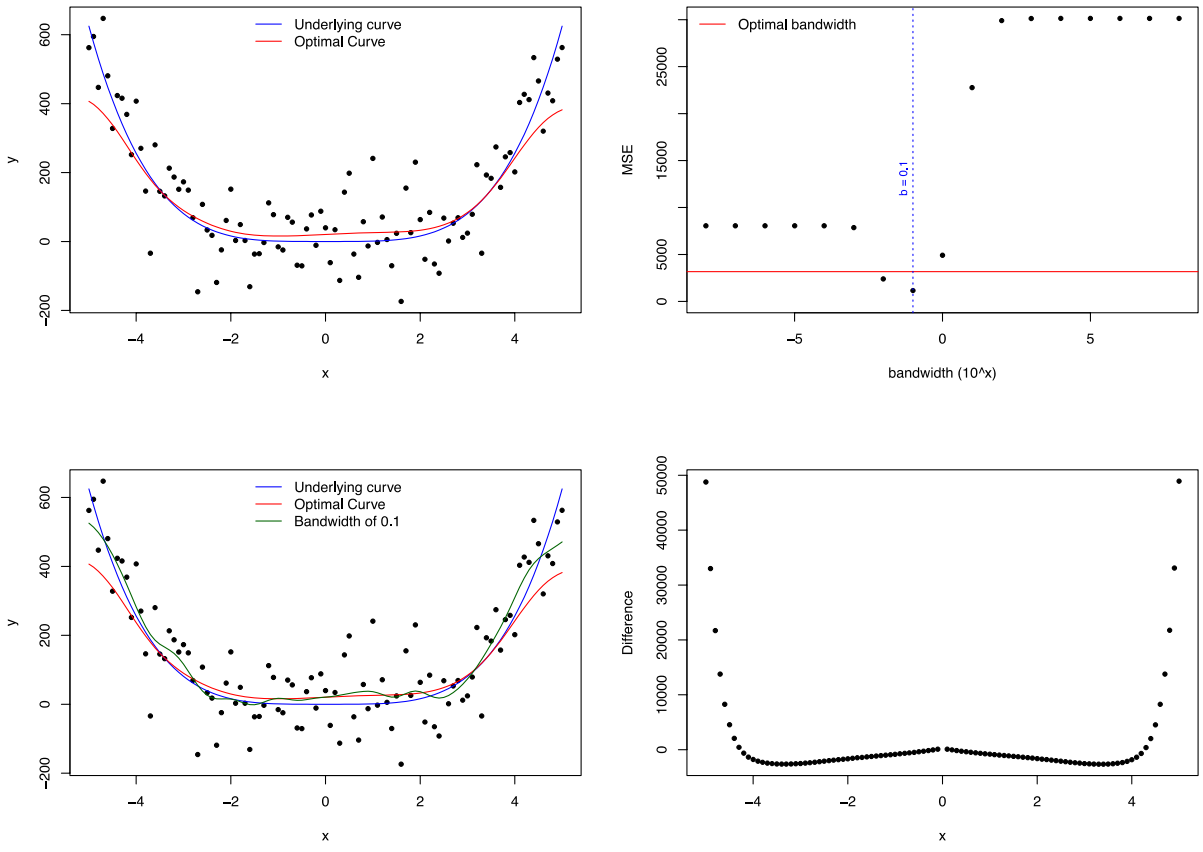

Figure 1: $y = x^4$

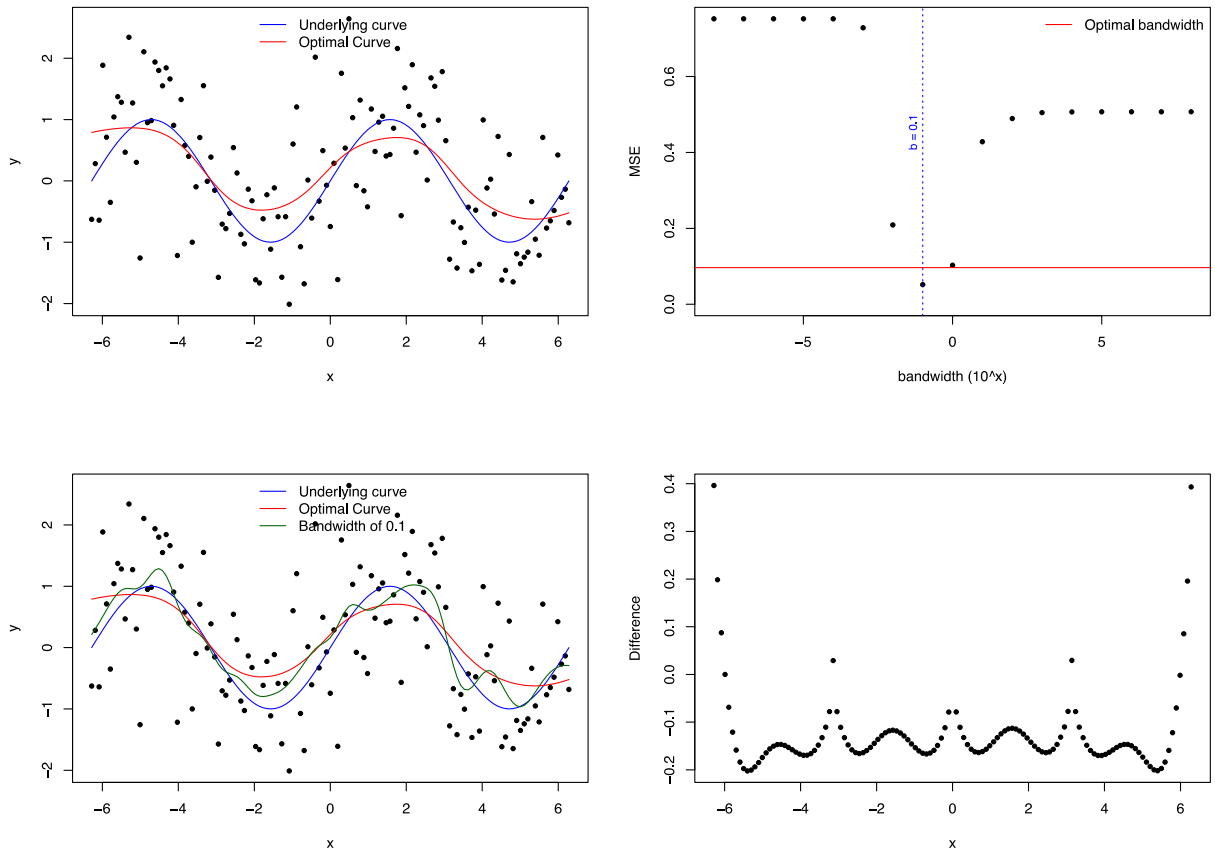

Figure 2: y = sin(x)

Other Question:

$$Y_i = g(x_i) + \epsilon_i$$

$$MSE = \sum_{i=1}^{N} (\hat{Y}_i - Y_i)^2 = \sum_{i=1}^{N} (\hat{Y}_i - g(x_i))^2$$

$$MISE = \int_1^5 [\hat{g}(x) - g(x)]^2 dx = \int_1^5 [\hat{Y}_i - g(x)]^2 dx = \sum_{i=1}^{N} [\hat{Y}_i - g(x)]^2 \cdot dx$$