

Check your model

Synferlo

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1 Collinearity

1. F -test result is significant, but none of the individual t -test results are significant.
2. The sign of a given coef estimate contradicts what you would reasonably expect to see, e.g., drinking more wine resulting in a lower blood alcohol level.
3. Estimators are associated with unusually high SE or vary wildly when the model is fitted to different random record subsets of the data.

2 Heteroscedasticity

In R, you can use plot() function on a lm() object, it can produce six types of diagnostic plot of the fit. You can manually select a particular plot specifying which = i argument, where i stands for the i^{th} plot.

Code:

```
modell = lm(norm_price ~ norm_supply * norm_volume, data = df)
png('figures/residual_diagnostic_plots.png')
par(mfrow = c(2,3))
plot(modell, which = 1)
plot(modell, which = 2)
plot(modell, which = 3)
plot(modell, which = 4)
plot(modell, which = 5)
plot(modell, which = 6)
dev.off()
```

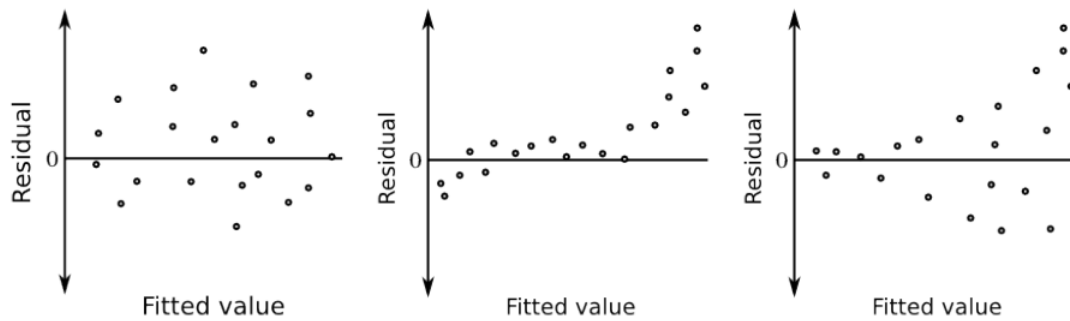


Figure 22-1: Three impressions of a hypothetical residuals versus fitted diagnostic plot from a linear regression: random (left), systematic (middle), and heteroscedastic (right)