# Condition 1: Linearity

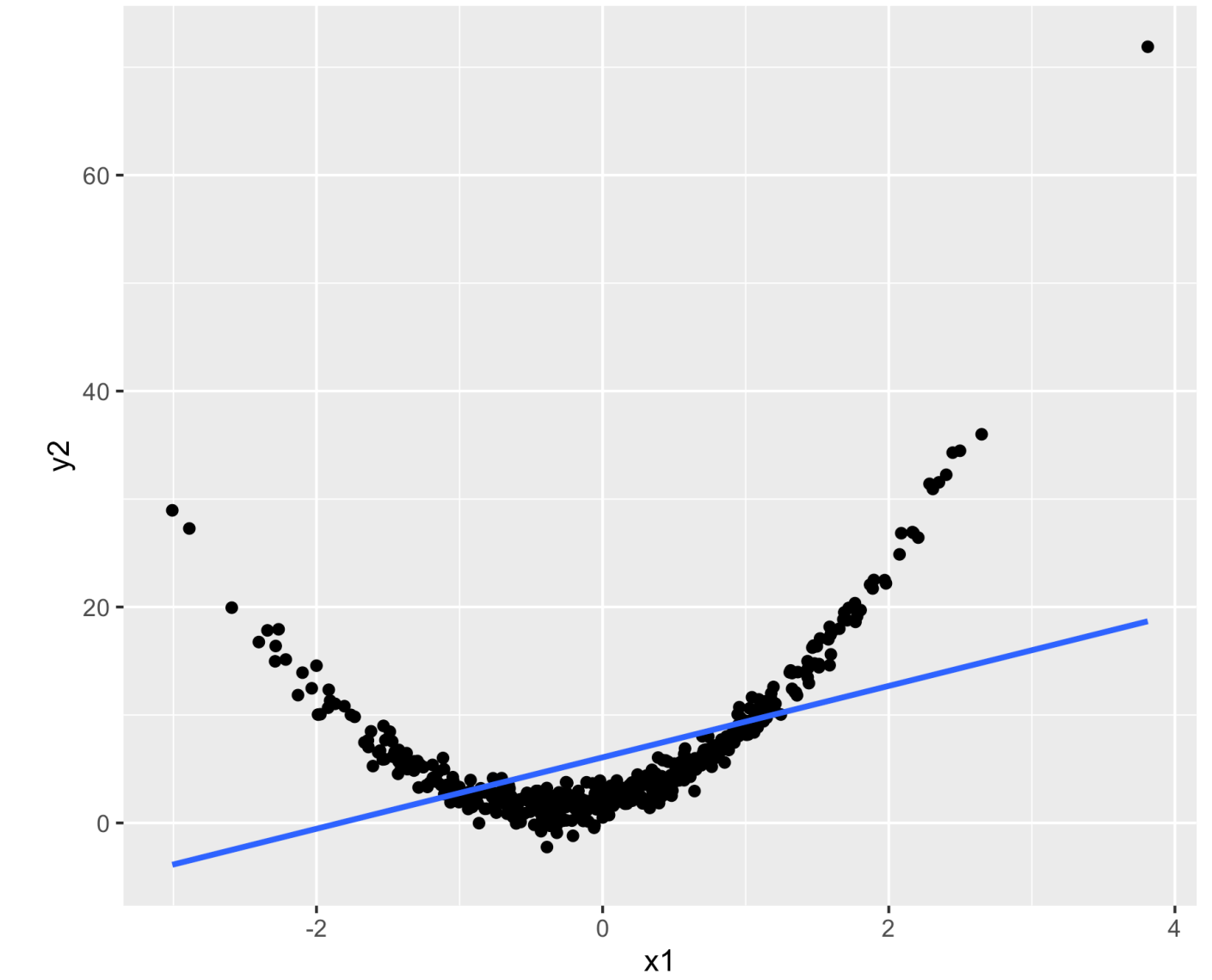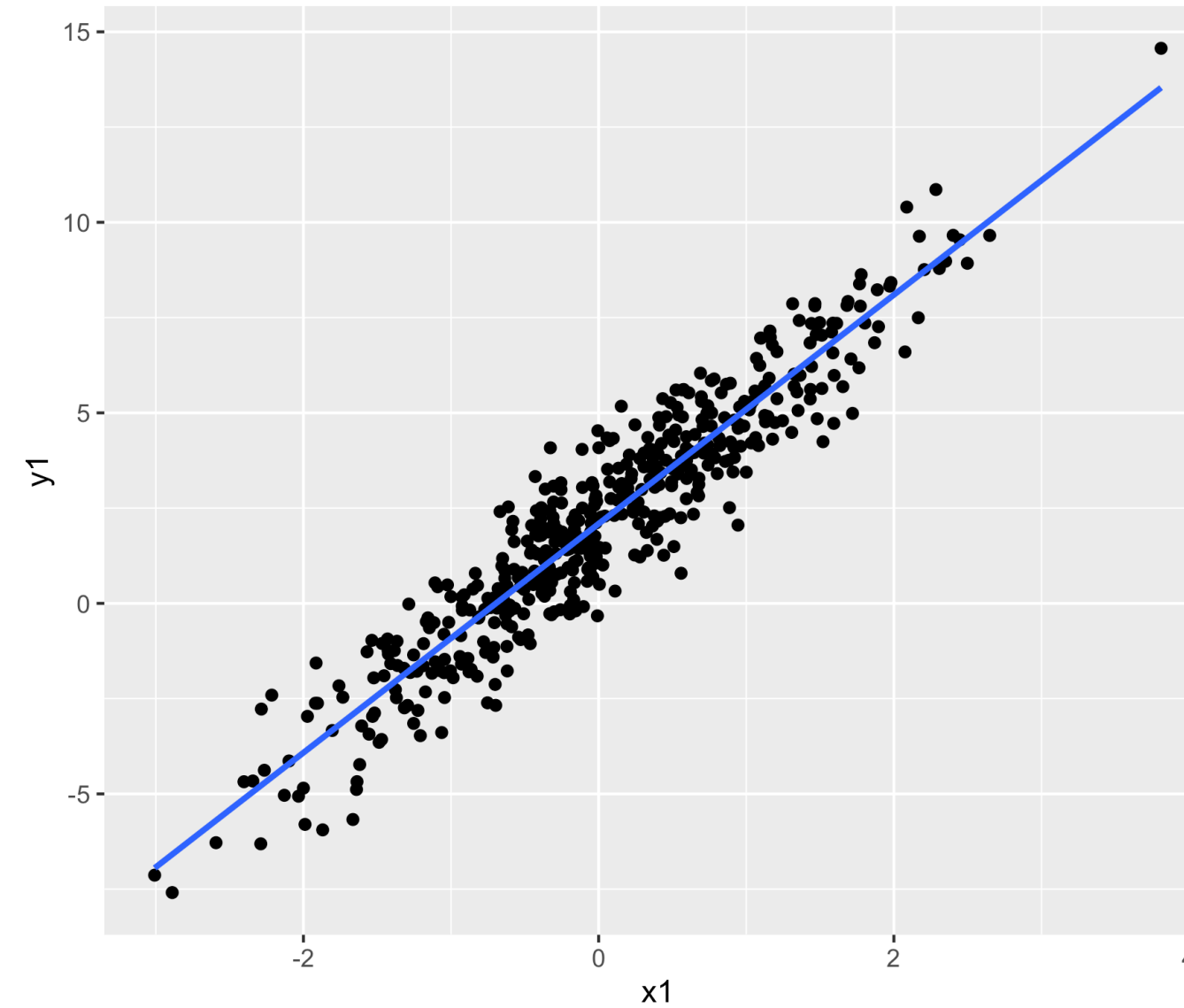- The relationship between the explanatory variables and the response variable should be linear.

- Can check using either a scatterplot or a **residual plot**.
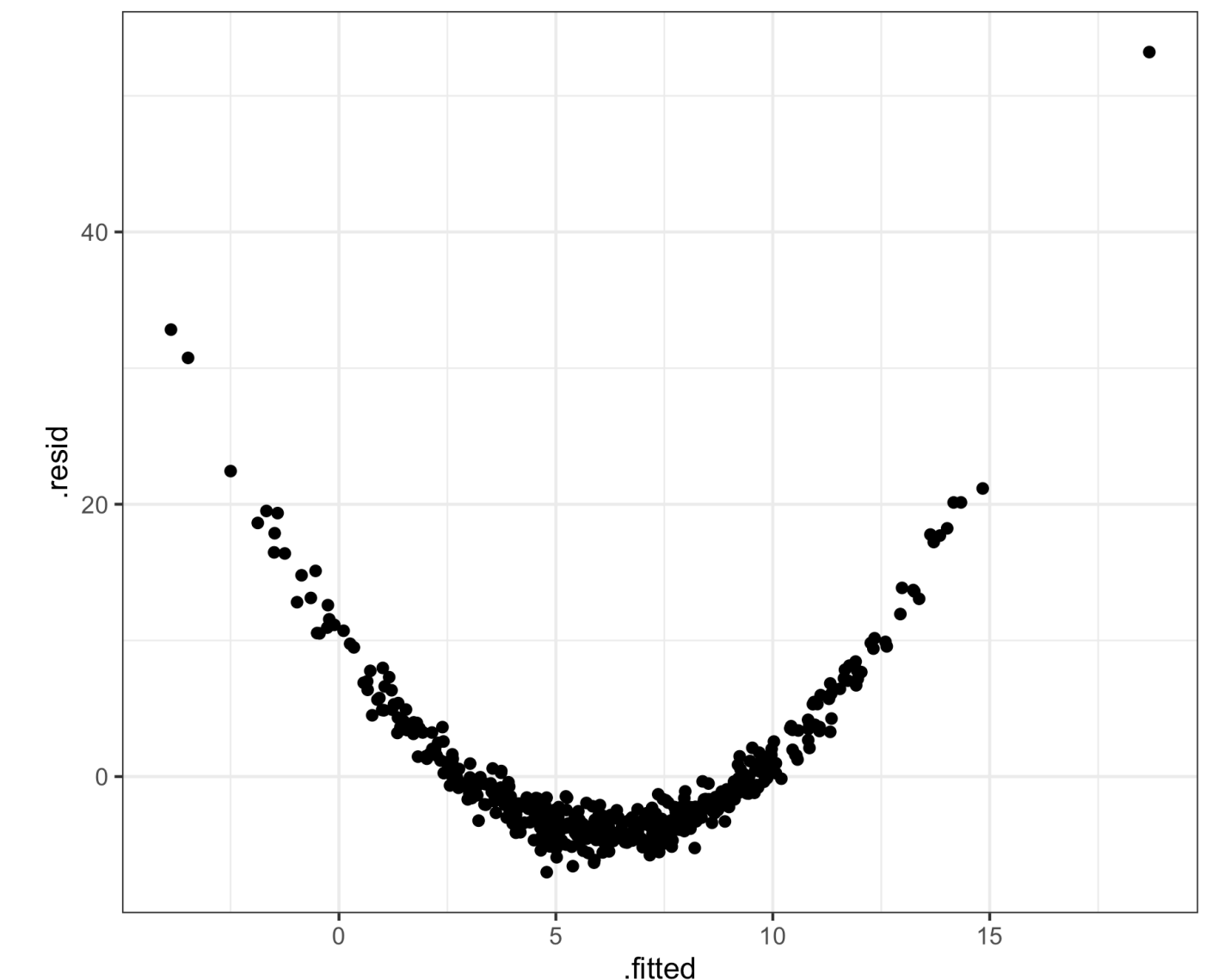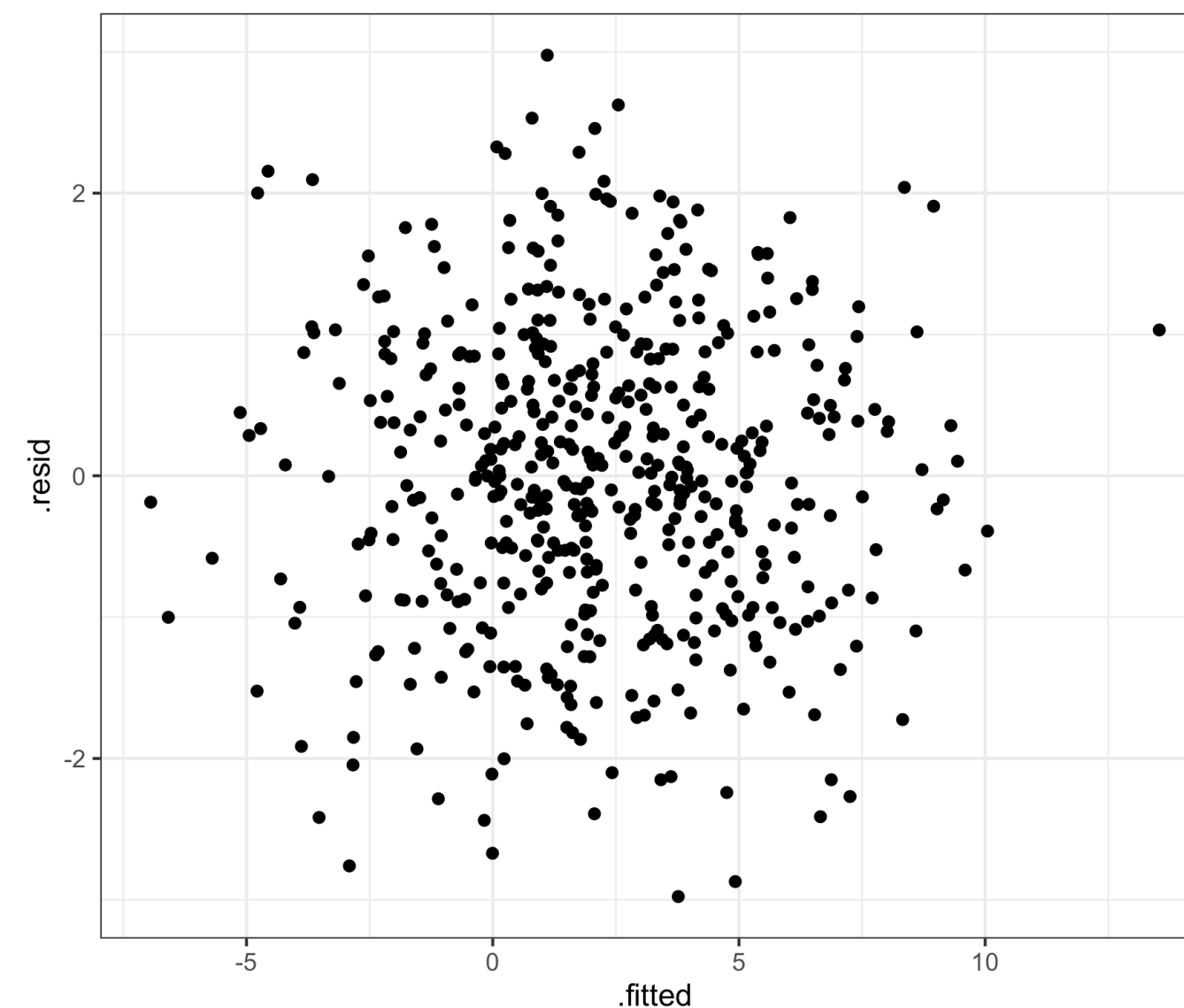
# Condition 2: Normal Residuals

- The residuals should come from a **normal distribution**.

- Check using a histogram of the residuals.

- This condition might not be satisfied if there are unusual observations that don't follow the trend of the data.
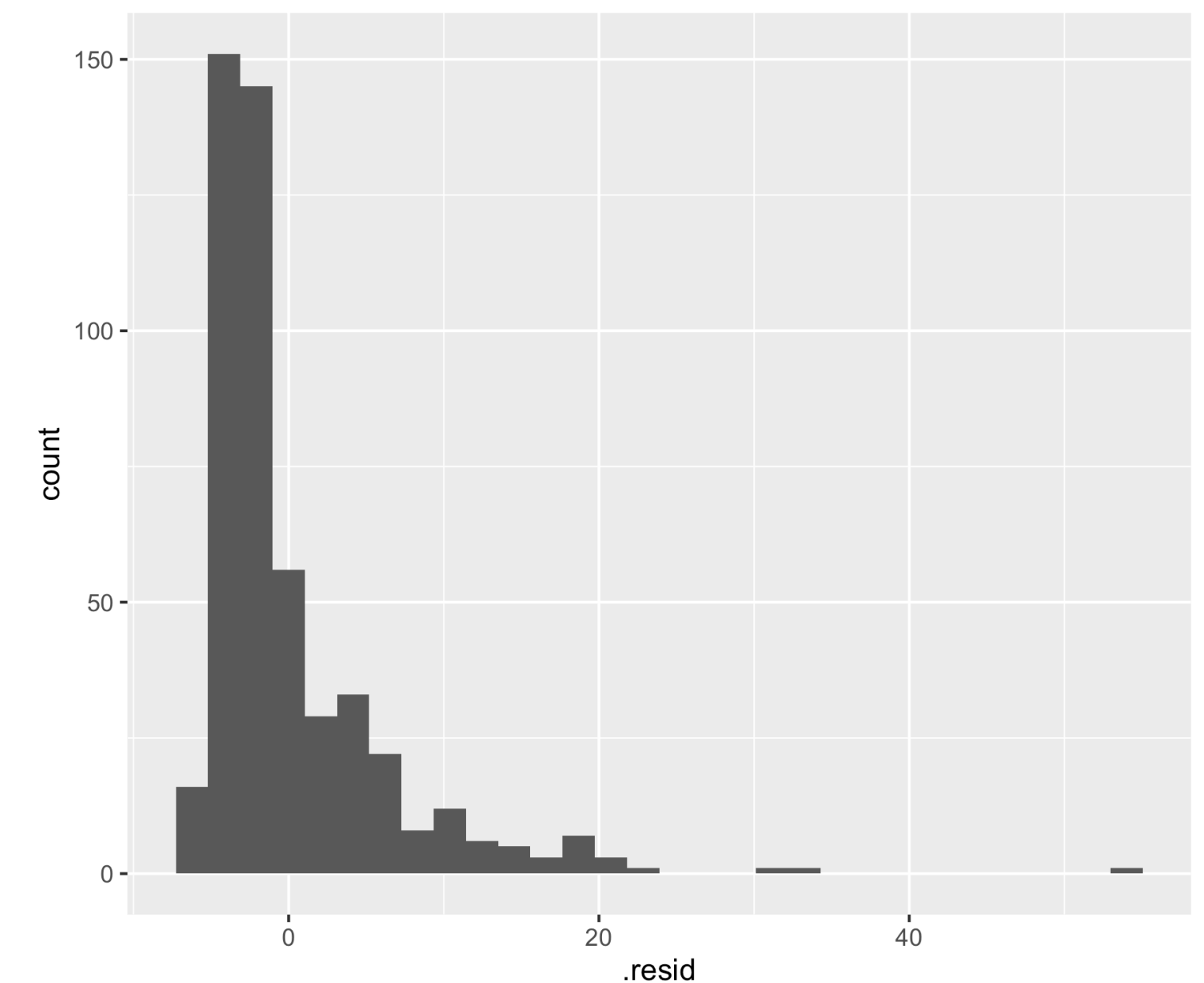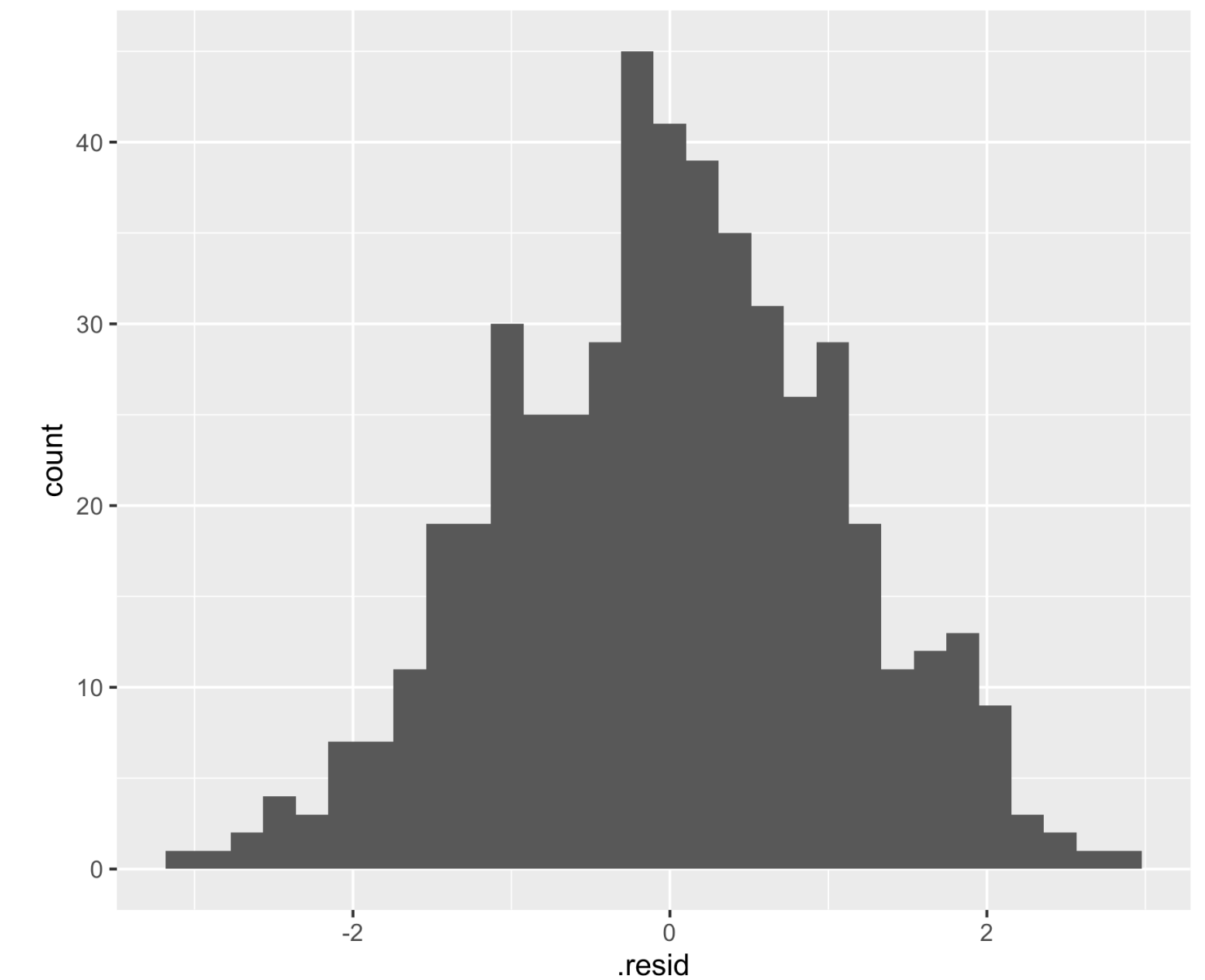
# Condition 3: Constant Variability

- There should be constant variability of points around the least squares line (**homoscedasticity**).

- This implies that the variability of residuals around the 0 line should be constant as well.
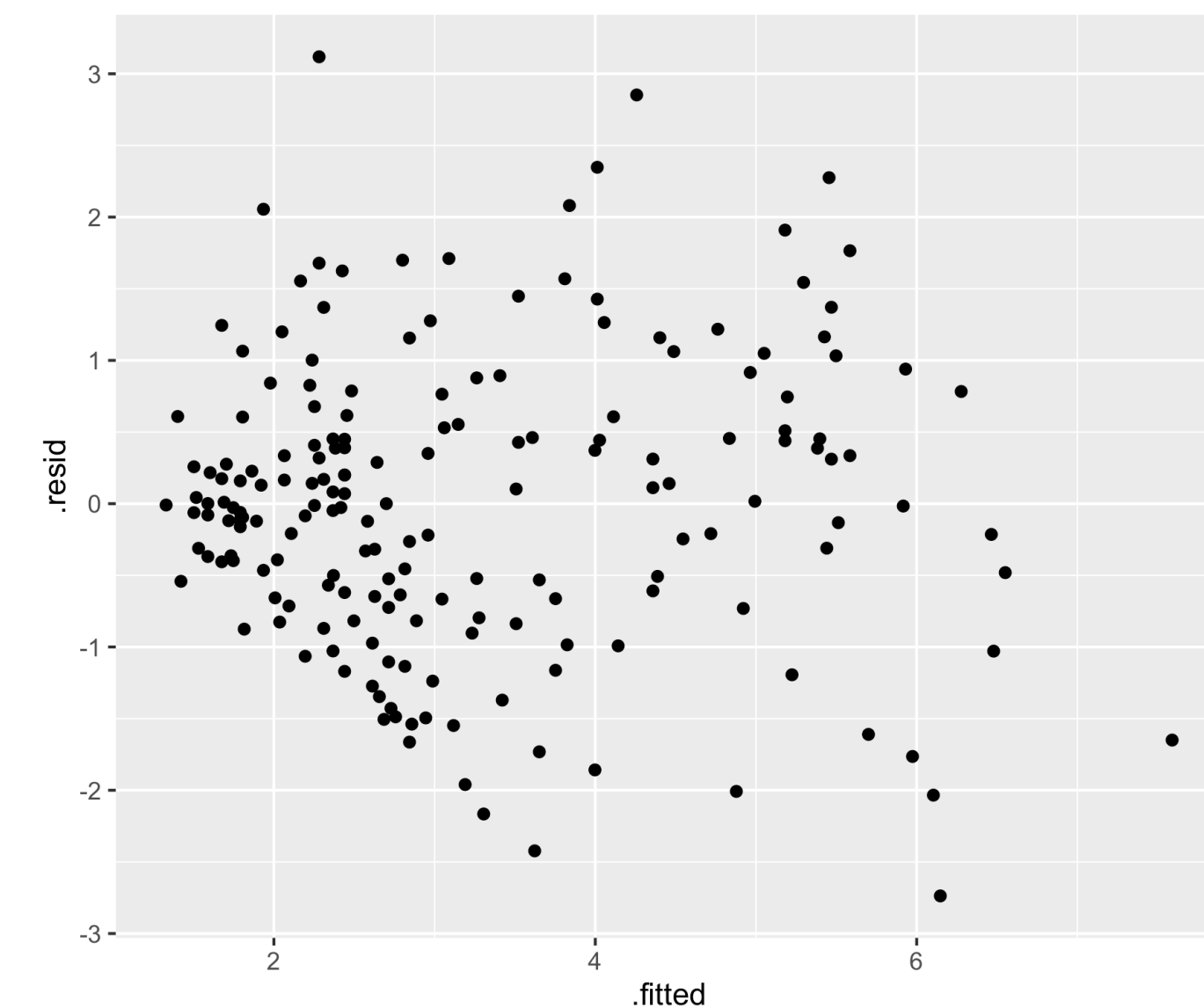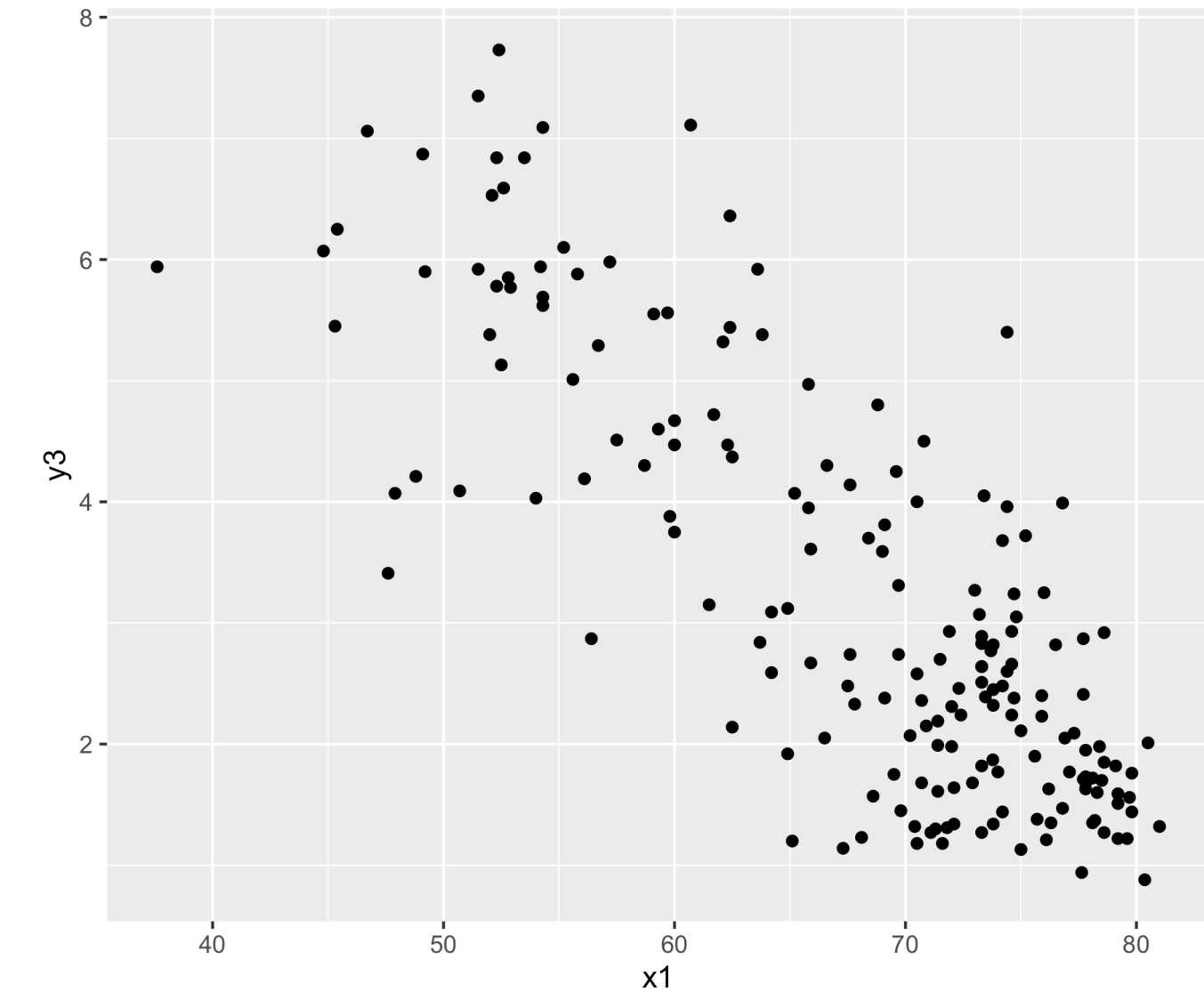
# Condition 4: Independent Observations

Be cautious about applying linear regression to data where the observations "depend" on one another in some way. For example, the data may have been collected sequentially in what is called a time series. Such data may have an underlying structure that should be considered in a model.