Regression Splines
Example: Wage (ISLR2)
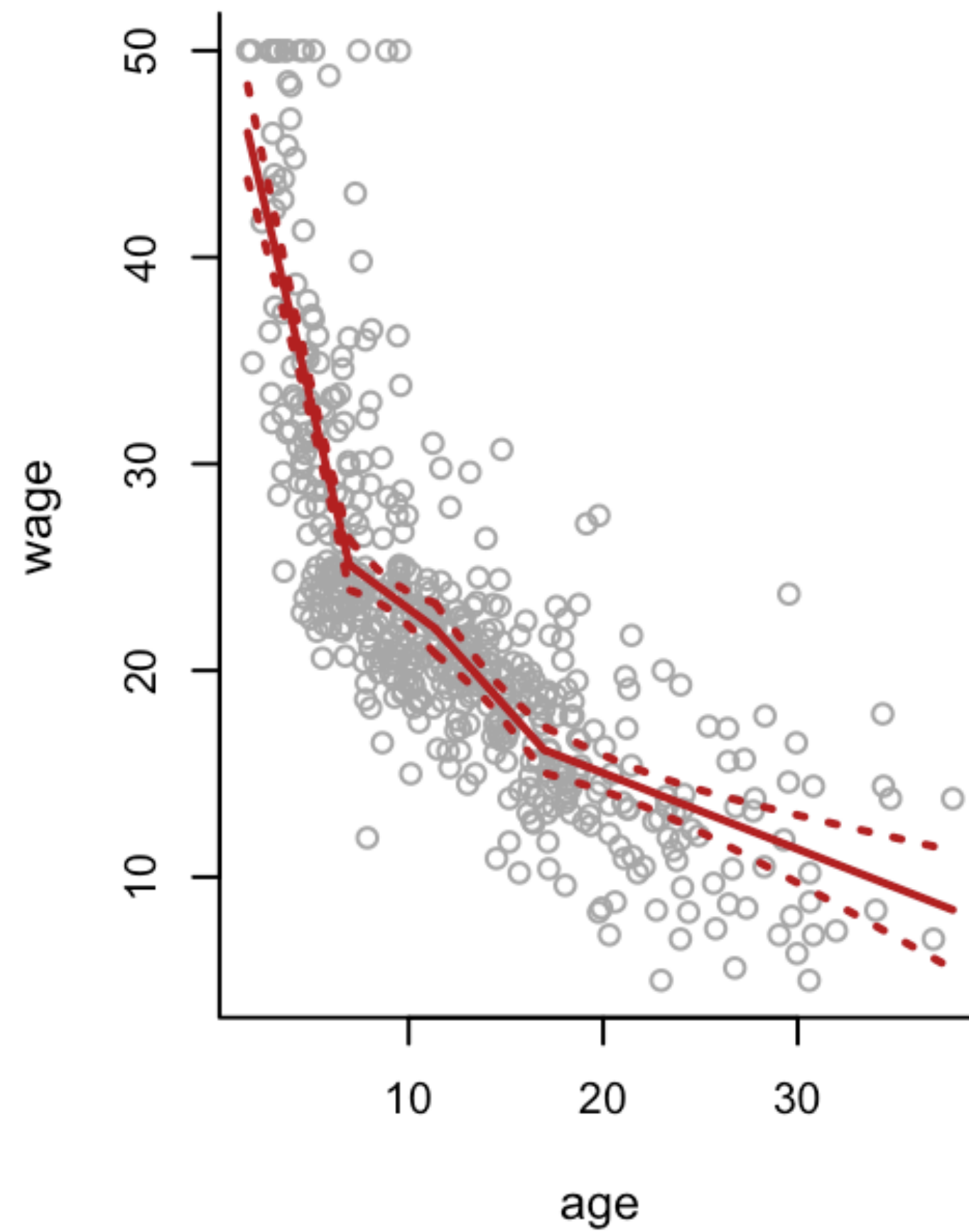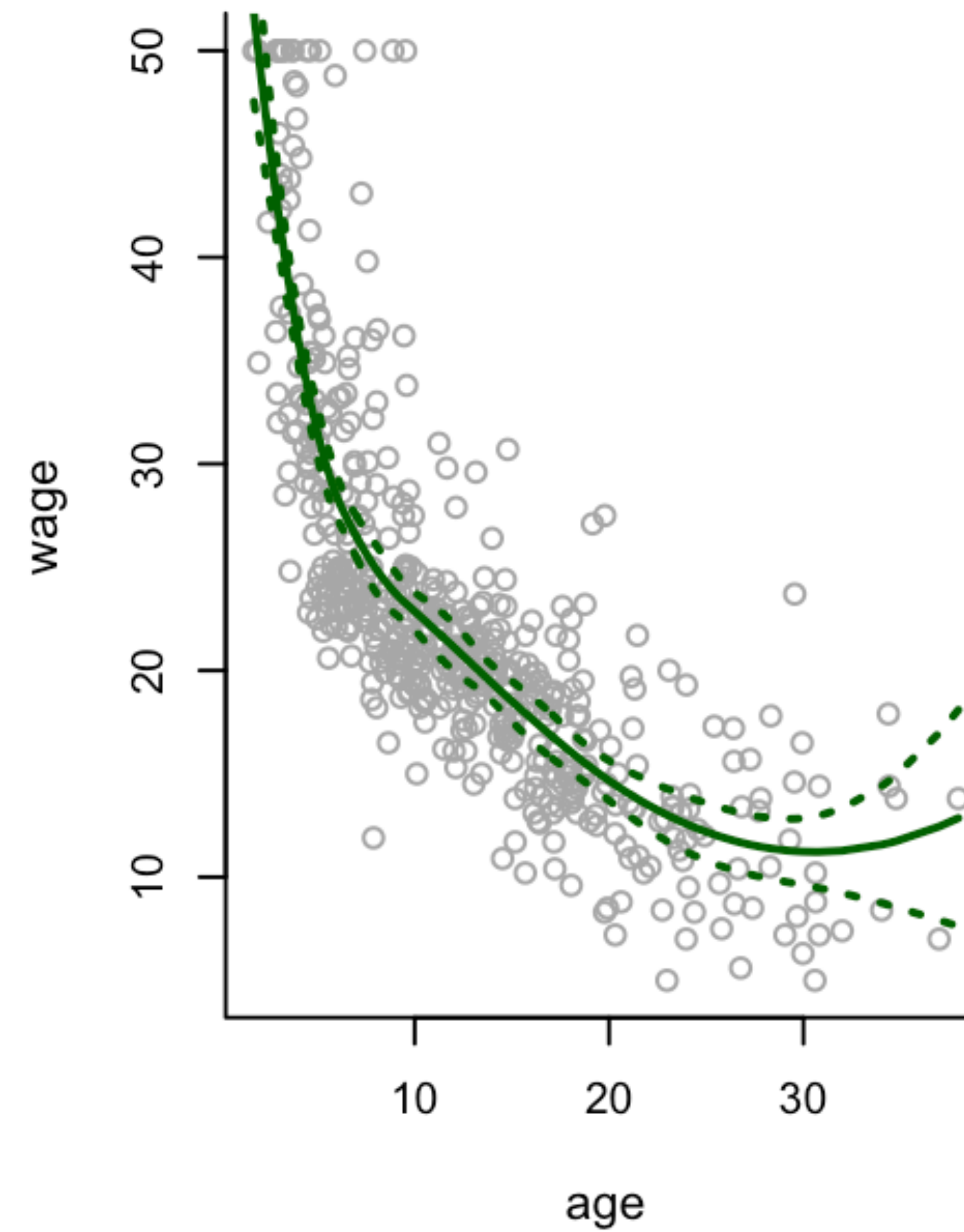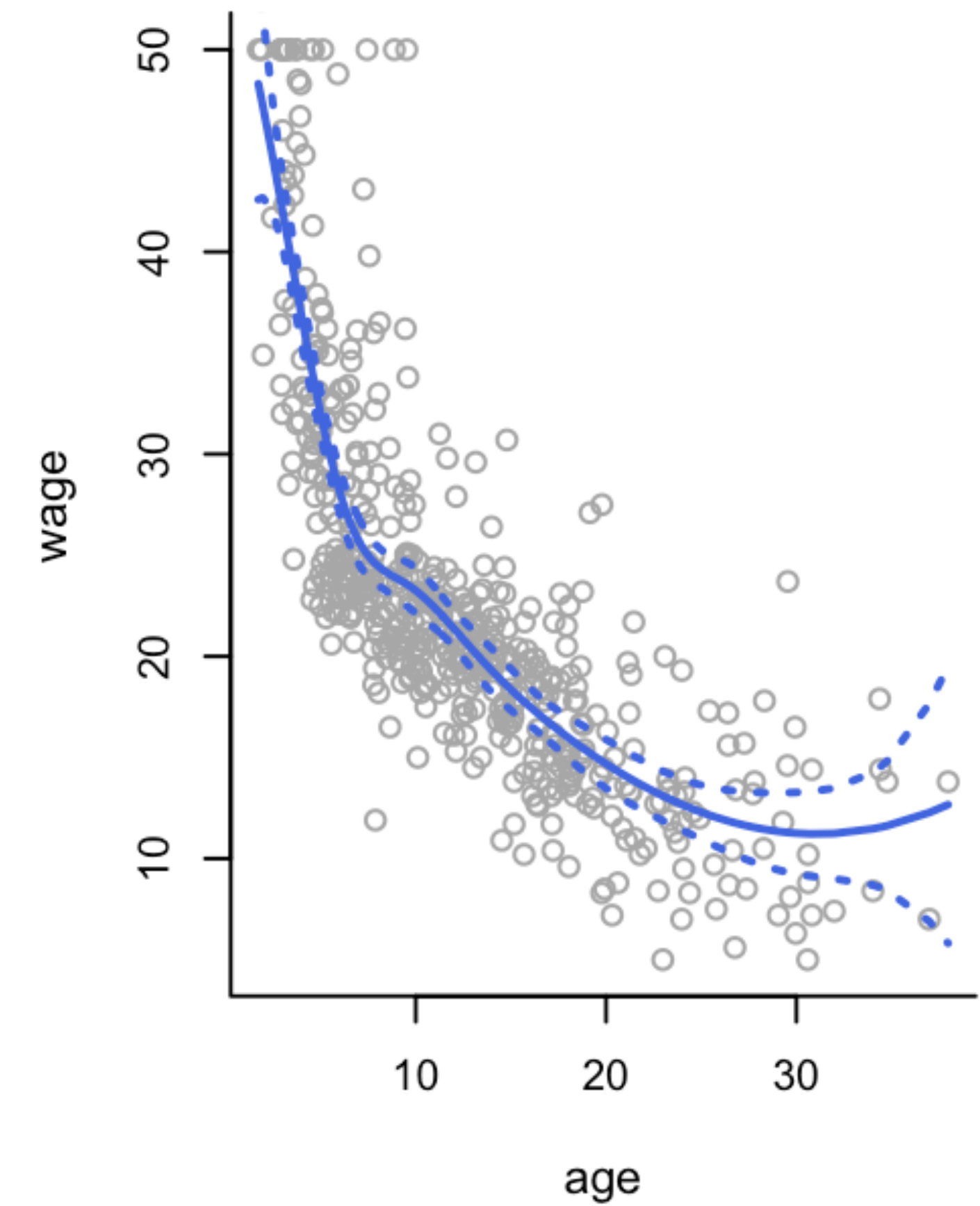
Regression Splines

Constraints and Degrees of Freedom

- In the previous example, we started with a cubic piecewise polynomial with 8 unconstrained parameters, so we started with 8 **degrees of freedom** (df)

- We initially imposed one constraint, which restricted one parameter, so we lost a degree of freedom $8 - 1 = 7$

- With the further two constraints: $8 - 3 = 5$ df

- In general, a cubic spline with K knots has $4 + K$ degrees of freedom. In R we can we can specify either the number of knots or just the degrees of freedom.

  A degree-d regression spline is a piecewise degree-d polynomial
  with continuity in derivatives up to degree $d - 1$ at each knot