

Haley-Knott regression

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Haley-Knott regression

A quick approximation to Interval Mapping.

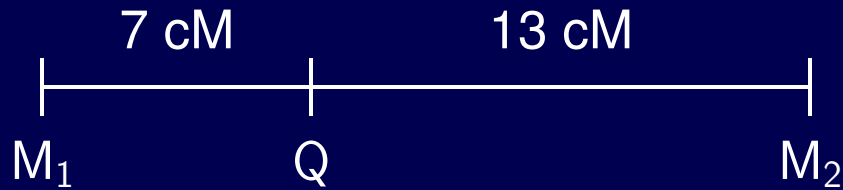
$$E(y_i|q_i) = \mu_q$$

$$\begin{aligned} E(y_i|M_i) &= E[E(y_i|q_i) |M_i] = \sum_j \Pr(q = j|M_i)\mu_j \\ &= \sum_j p_{ij}\mu_j \end{aligned}$$

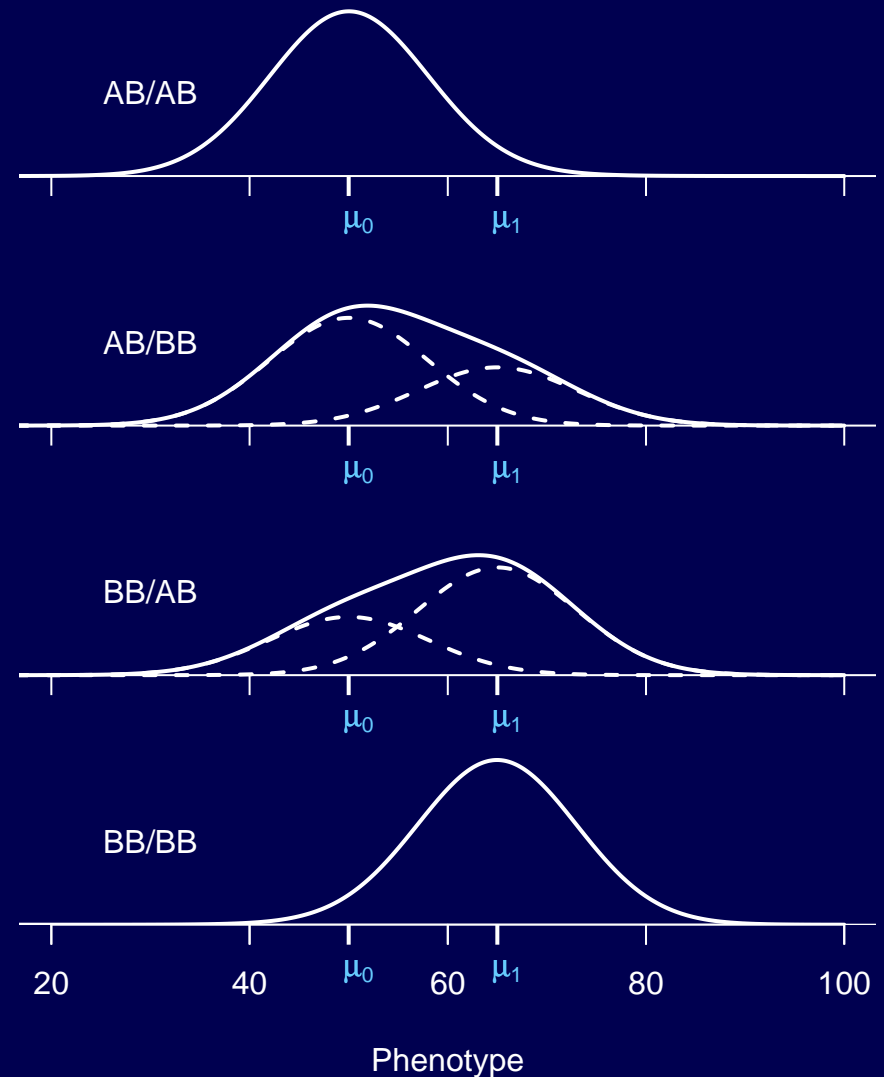
Regress y on p_i , pretending the residual variation is normally distributed (with constant variance).

$$\text{LOD} = \frac{n}{2} \log_{10} \left(\frac{\text{RSS}_0}{\text{RSS}_1} \right)$$

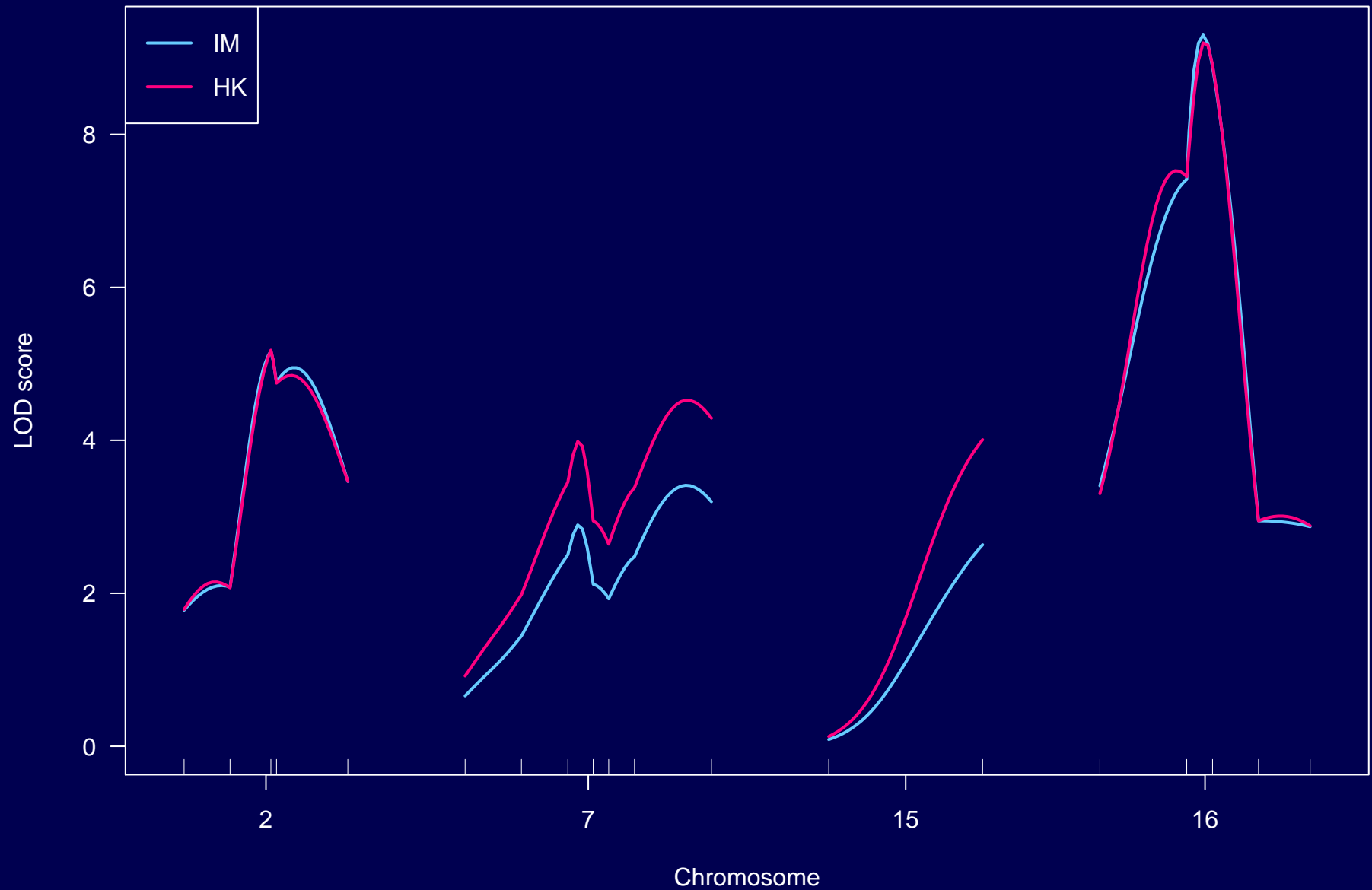
The normal mixtures



- Two markers separated by 20 cM, with the QTL closer to the left marker.
- The figure at right shows the distributions of the phenotype conditional on the genotypes at the two markers.
- The dashed curves correspond to the components of the mixtures.



Haley-Knott results



H-K with selective genotyping

