



$$\text{Region 1} = \frac{\text{IBS0}}{\text{IBS0} + \text{IBS2}^*} = \frac{2p^2q^2}{2p^2q^2 + 4p^2q^2} = \frac{1}{3} = \text{inferred IBD0}$$

$$\text{Region 2} = \frac{\text{IBS0}}{\text{IBS0} + \text{IBS2}^*} = 0 = \text{inferred "not" IBD0}$$

$$\text{Region 3} = \text{"not" IBD0} = \frac{\text{IBS1}}{\text{IBS1} + \text{IBS2}^*} = c \text{ (see Methods)} = \text{inferred IBD1}$$

$$\text{Region 4} = \text{"not" IBD0} = \frac{\text{IBS1}}{\text{IBS1} + \text{IBS2}^*} = 0 = \text{inferred IBD2}$$

K0 = sum of regions inferred to be IBD0 / total genome length

K1 = sum of regions inferred to be IBD1 / total genome length

K2 = sum of regions inferred to be IBD2 / total genome length