

Galton's Data P=Parents' average ht. S=Son's ht.

$$\begin{pmatrix} P \\ S \end{pmatrix} \sim N \left(\begin{pmatrix} 68.3 \\ 68.1 \end{pmatrix}, \begin{pmatrix} 3.19 & 2.06 \\ 2.06 & 6.34 \end{pmatrix} \right)$$

1. What is the distribution of (P-S)?
Type of distribution _____
Mean _____ Variance _____
2. What proportion of sons' heights exceed their parents' average height by 1"? $\Pr\{S-P>1\} = \Pr\{Z>___\} = 0.3037$
3. Challenge: Why do you think the S variance is twice that of P? Any theory?
4. For later: what is the correlation between P and S?