HHH, HHT, TTT $k=0.5$ $p_0=0.6$ $p_1=0.1$

HHH

$P(HHH|C_0)=p_0^3=0.6^3=0.216$

$P(HHH|C_1)=p_1^3=0.1^3=0.001$

總和 $=0.5\times0.216+0.5\times0.001=0.1085$

$$\gamma_1=P(C_0|HHH)=\frac{0.5\times0.216}{0.1085}\approx0.995$$

HHT

$P(HHT|C_0)=p_0^2(1-p_0)=0.6^2\,0.4=0.144$

$P(HHT|C_1)=p_1^2(1-p_1)=0.1^2\cdot0.9=0.009$

總和 $=0.5\times0.144+0.5\times0.009=0.0765$

$$r_2=P(C_0|HHT)=\frac{0.5\times0.144}{0.0765}\sim0.9411$$

0.0589

TTT

$P(TTT|C_0)=(1-p_0)^3=0.4^3=0.064$

$P(TTT|C_1)=(1-p_1)^3=0.9^3=0.729$

$0.5\times0.064+0.5\times0.729=0.3965$

$$r_3=P(C_0|TTT)=\frac{0.5\times0.064}{0.3965}\sim0.0807\quad 0.9193$$

$$k=\frac{1}{3}\sum_{i=1}^{3}r_i=\frac{1}{3}(0.995+0.615+0.081)\approx0.672$$

加權平均來自 C_0 的 H 出現比例

$$p_0^{new}=\frac{3\times0.995+2\times0.941+0}{0.995\times3+0.941\times3+0.0807\times3}=\frac{4.867}{6.051}\approx0.804$$

$$p_1^{new}=\frac{3\times0.005+2\times0.059+0\times0.919}{3\times(0.005+0.0589+0.919)}=\frac{0.133}{2.948}=0.045$$