

- $P(a | b) = P(a \wedge b) / P(b)$
 $P(a \wedge b) = P(a | b) * P(b)$
- $P(b | a) = P(b \wedge a) / P(a)$
 $P(b \wedge a) = P(b | a) * P(a)$
 $P(a \wedge b) = P(b | a) * P(a)$
- $P(b | a) * P(a) = P(a | b) * P(b)$
 $P(b | a) = P(a | b) * P(b) / P(a)$

m		
S	m	
1,2	2,2	
	S	m
1,1	2,1	

1

$\neg m$		
S	m	
	S	m

2

m		
S	$\neg m$	
	S	m

3

m		
S	m	
	S	$\neg m$

4

$\neg m$		
S	m	
	S	$\neg m$

5

m		
S	m	
1,2	2,2	
	S	m
1,1	2,1	

1

$\neg m$		
S	m	
	S	m

2

m		
S	$\neg m$	
	S	m

3

m		
S	m	
	S	$\neg m$

4

$\neg m$		
S	m	
	S	$\neg m$

5

$P(m_{1,3} \mid \text{evidence}) =$

$$\begin{aligned}
 &= \frac{0.2*0.2*0.2 + 0.2*0.8*0.2 + 0.2*0.2*0.8}{0.2*0.2*0.2 + 0.8*0.2*0.2 + 0.2*0.8*0.2 + 0.2*0.2*0.8 + 0.8*0.2*0.8} [1, 3, 4] \\
 &= 0.072 / 0.232 \approx 0.31 ?
 \end{aligned}$$

m		
S	m	
1,2	2,2	
	S	m
1,1	2,1	

1

$\neg m$		
S	m	
	S	m

2

m		
S	$\neg m$	
	S	m

3

m		
S	m	
	S	$\neg m$

4

$\neg m$		
S	m	
	S	$\neg m$

5

$P(\neg m_{1,3} \mid \text{evidence})$

$$\begin{aligned}
 &= \frac{0.8*0.2*0.2 + 0.8*0.2*0.8}{0.2*0.2*0.2 + 0.8*0.2*0.2 + 0.2*0.8*0.2 + 0.2*0.2*0.8 + 0.8*0.2*0.8} \quad [2, 5] \\
 &= 0.16 / 0.232 \quad \approx \quad 0.69 ?
 \end{aligned}$$