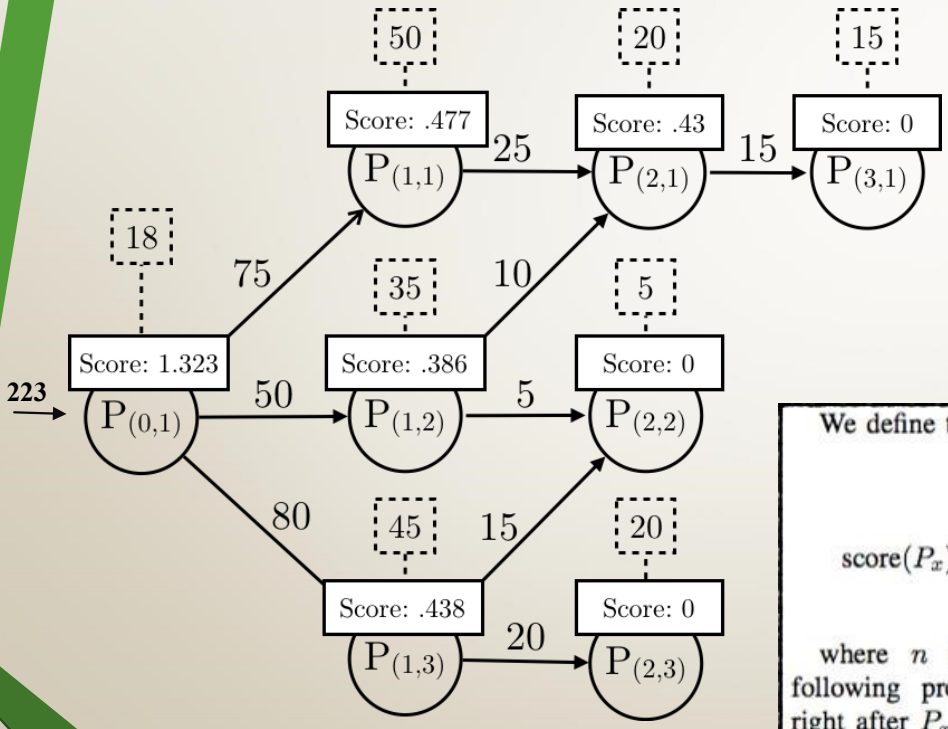
State Space Example – Procedure Graph

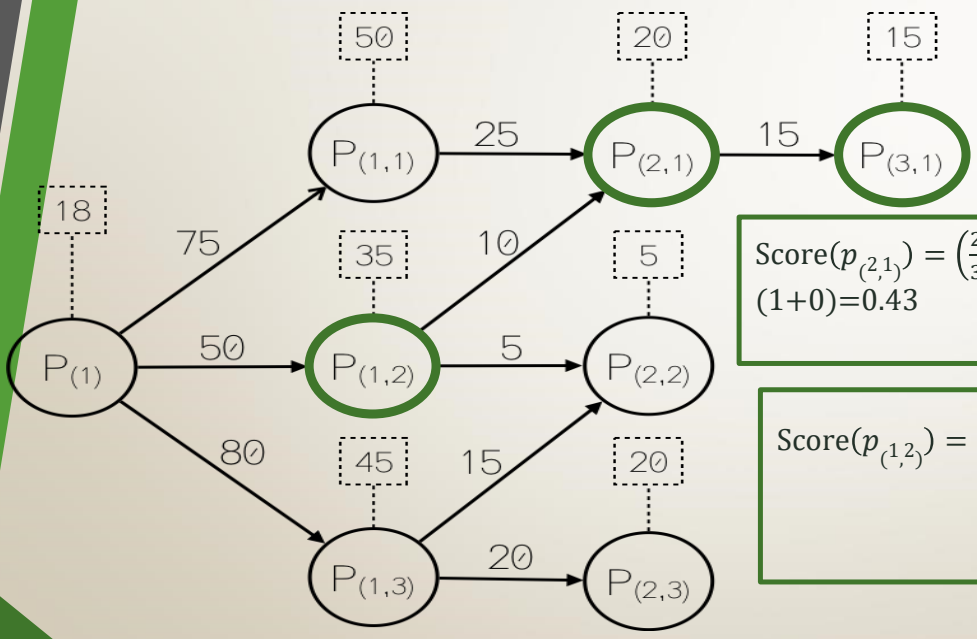


We define the procedure score recurrence function as:

$$\text{score}(P_x) = \begin{cases} \sum_{k=1}^{n} \frac{|P_k|}{|P_x|} * (1+\text{score}(P_k)) & \text{if } n \geq 1 \\ 0, & \text{otherwise} \end{cases}$$

where n denotes the number of procedures directly following procedure P_x, P_k denotes the kth procedure right after P_x, and $|P_k|$ denotes the number of patients that underwent the kth procedure.

Calculating Procedure Graph Score

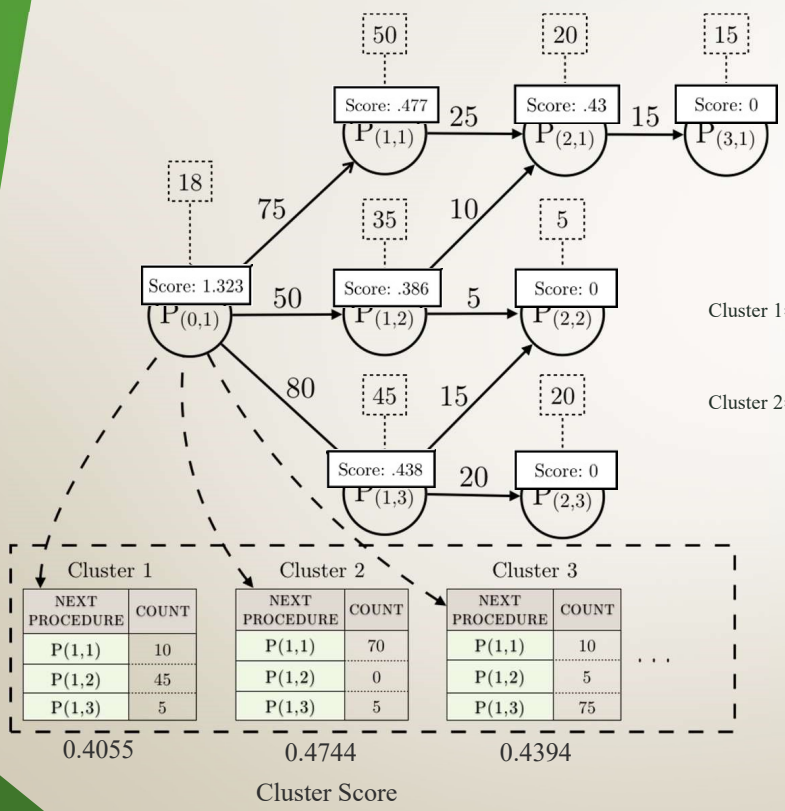


$\text{Score} = 0$

$$\text{Score}(p_{(2,1)}) = \left(\frac{20}{35} * 0\right) + \left(\frac{15}{35} * (1+\text{cost}(P_{(3,1)}))\right) = \frac{15}{35} * (1+0) = 0.43$$

$$\text{Score}(p_{(1,2)}) = \left(\frac{35}{50} * 0\right) + \left(\frac{10}{50} * (1+\text{cost}(P_{(2,1)}))\right) + \left(\frac{5}{50} * (1+\text{cost}(P_{(2,2)}))\right) = 0.386$$

Second: Calculating Clusters' Score



Cluster 1

NEXT PROCEDURE	COUNT
P(1,1)	10
P(1,2)	45
P(1,3)	5

Cluster 2

NEXT PROCEDURE	COUNT
P(1,1)	70
P(1,2)	0
P(1,3)	5

Cluster 3

NEXT PROCEDURE	COUNT
P(1,1)	10
P(1,2)	5
P(1,3)	75

. . .

0.4055 0.4744 0.4394

Cluster Score

Cluster 1= $\frac{10}{60} * (1 + 0.477) + \frac{45}{60} * (1 + 0.386) + \frac{5}{60} * (1 + 0.438)$

Cluster 2=