Questionnaires and beyond: The Rasch model

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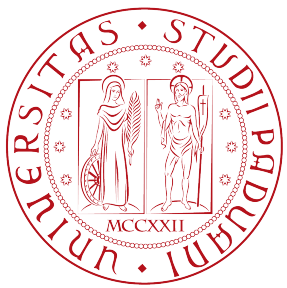
Antani convegno AIP



Q1

$$4 + 5 = ?$$

Q2

$$\frac{3}{2} + \frac{5}{4} = ?$$

Q1

$4 + 5 = ?$

d_{q1}

Q2

$\frac{3}{2} + \frac{5}{4} = ?$

d_{q2}

Q1

$4 + 5 = ?$

d_{q1}

A_{Bart}

Q2

$\frac{3}{2} + \frac{5}{4} = ?$

d_{q2}

A_{Lisa}

$$\frac{A_p}{d_i} \qquad (1)$$

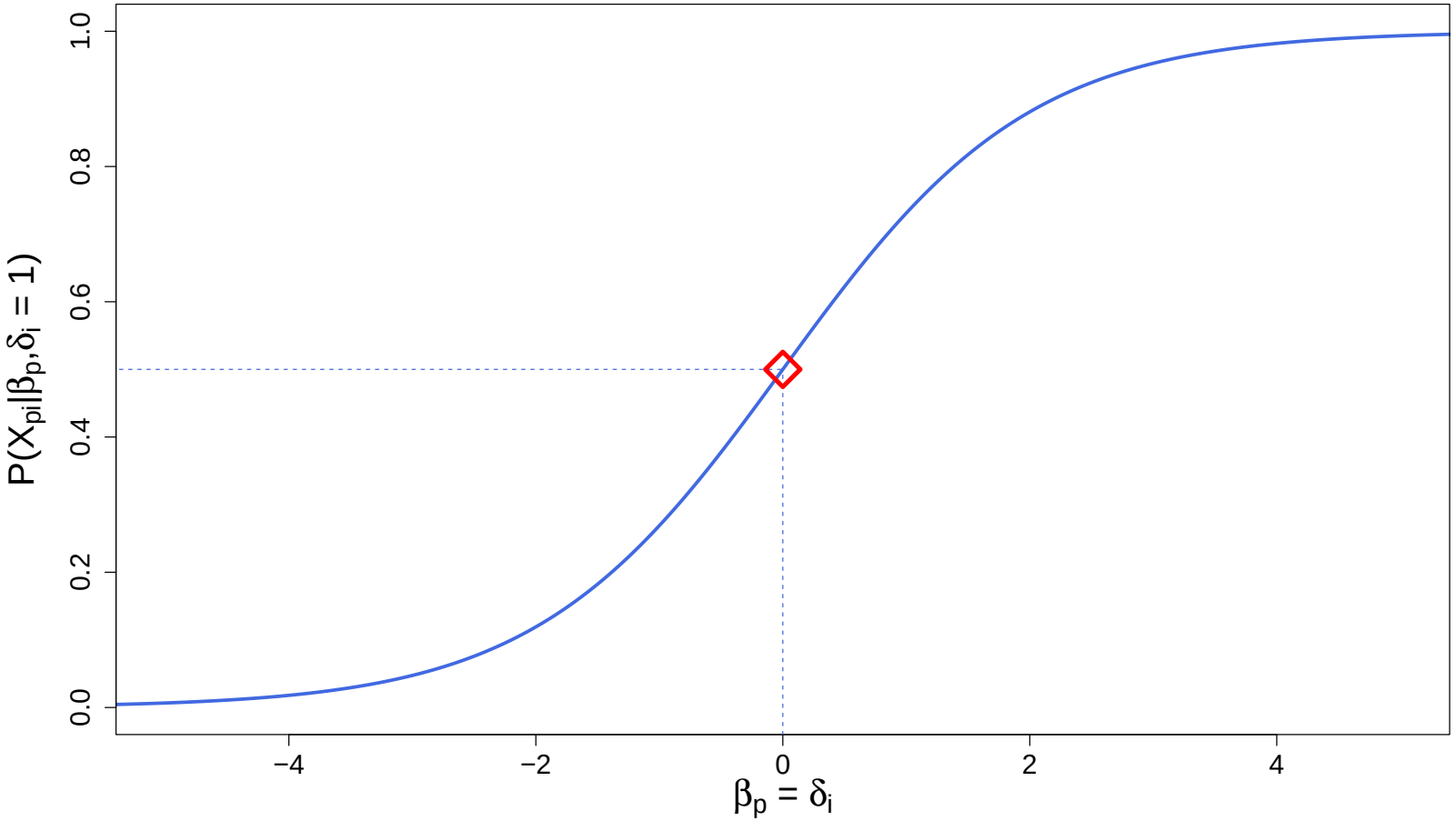
> 1 if $A_p > d_i$

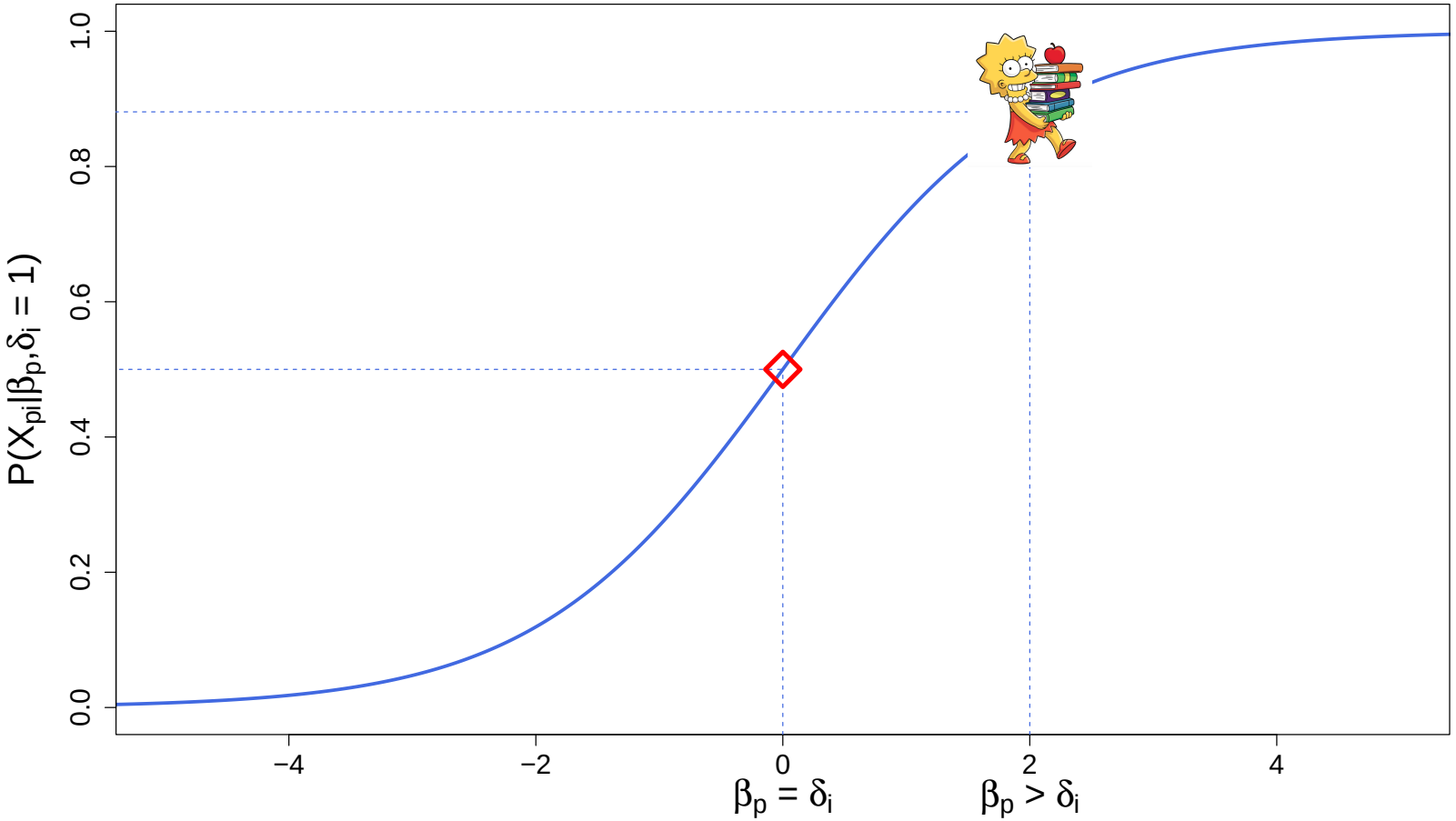
< 1 if $A_p < d_i$

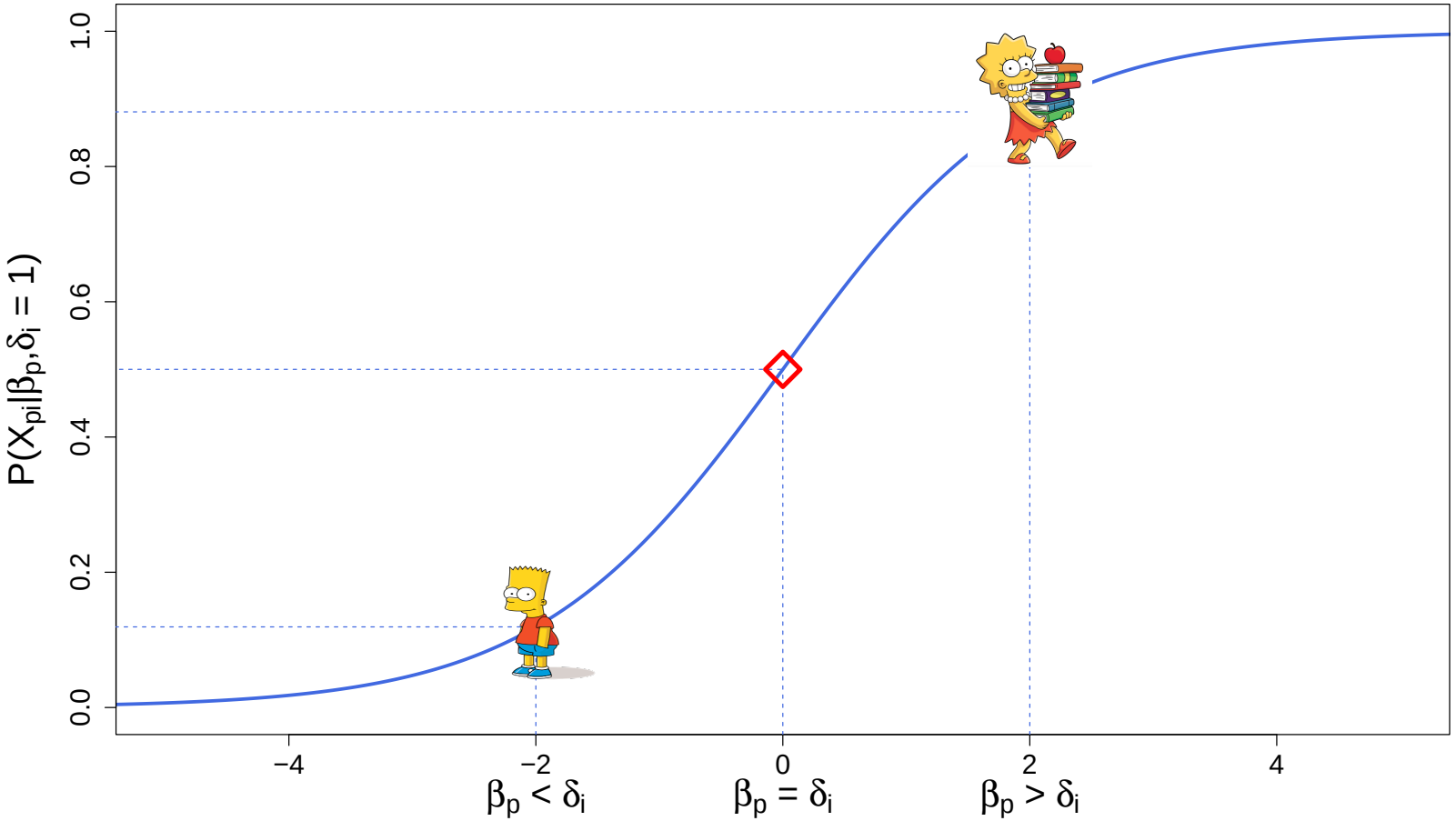
$$P(X_{pi} = 1) = \frac{\frac{A_p}{d_i}}{1 + \frac{A_p}{d_i}} \qquad (2)$$

$$ln(A_p) = \beta_p \qquad ln(d_i) = \delta_i$$

$$P(X_{vi}|\beta_p, \delta_i) = \frac{exp(\beta_p - \delta_i)}{1 + exp(\beta_p - \delta_i)} \tag{3}$$


1.0
0.8
0.6
0.4
0.2
0.0
P(X_pi|β_p,δ_i = 1)
−4
−2
0
2
4
β_p = δ_i

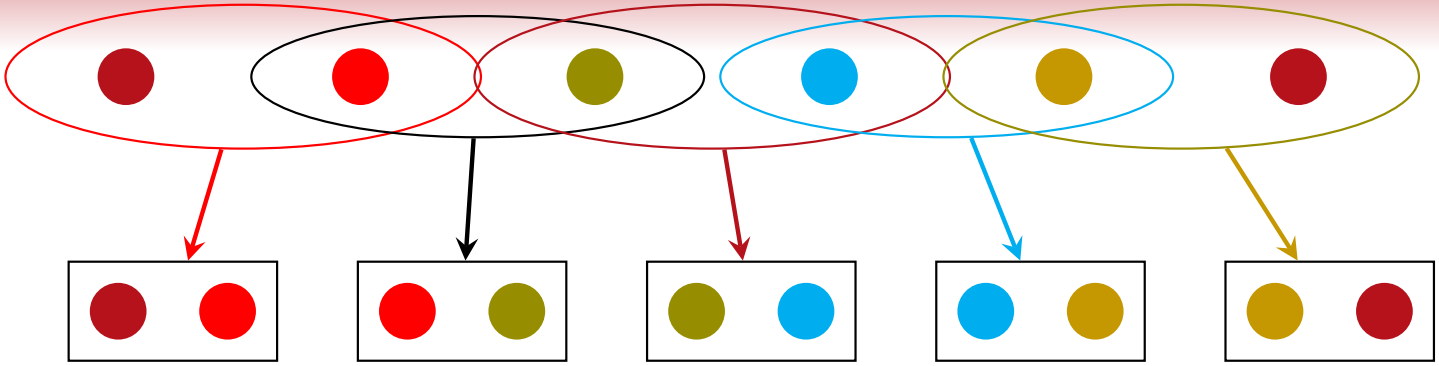

1.0
0.8
0.6
0.4
0.2
0.0
$P(X_{pi}|\beta_p,\delta_i = 1)$
−4
−2
0
2
4
$\beta_p = \delta_i$
$\beta_p > \delta_i$

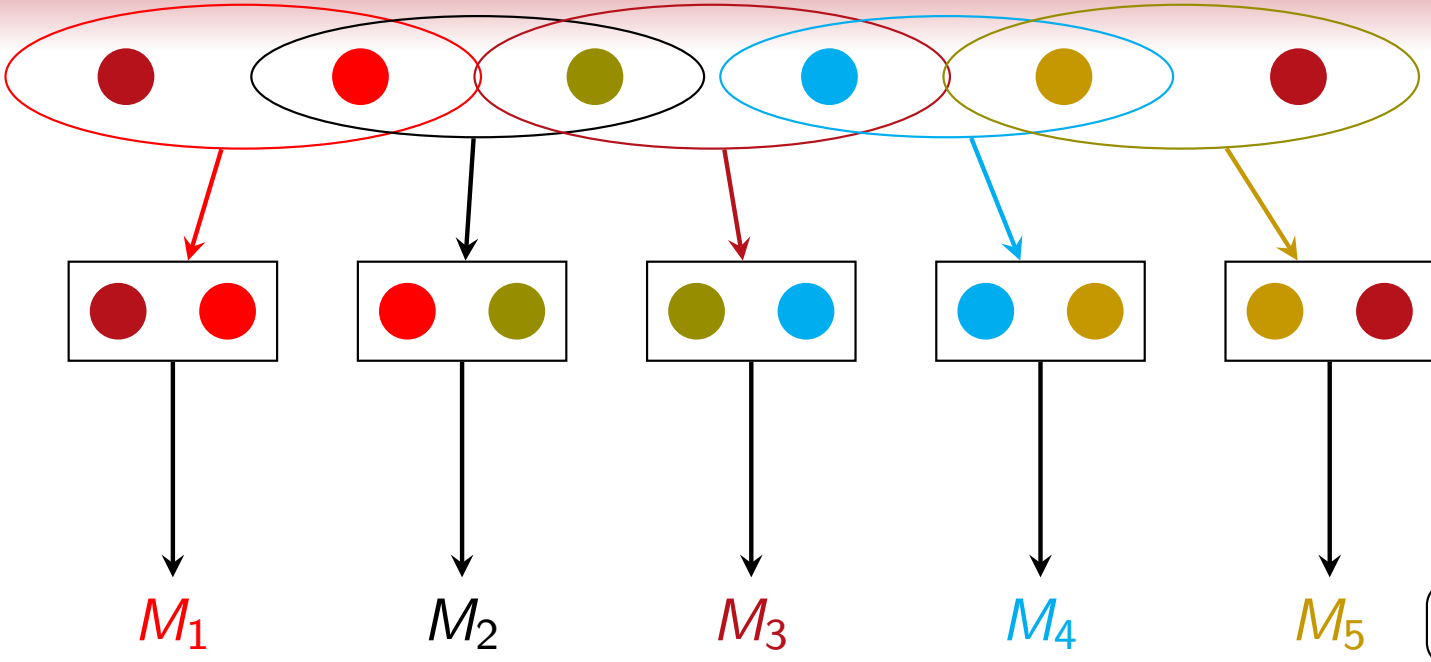

$P(X_{pil}|\beta_p,\delta_i = 1)$
0.0
0.2
0.4
0.6
0.8
1.0
−4
−2
0
2
4
$\beta_p < \delta_i$
$\beta_p = \delta_i$
$\beta_p > \delta_i$

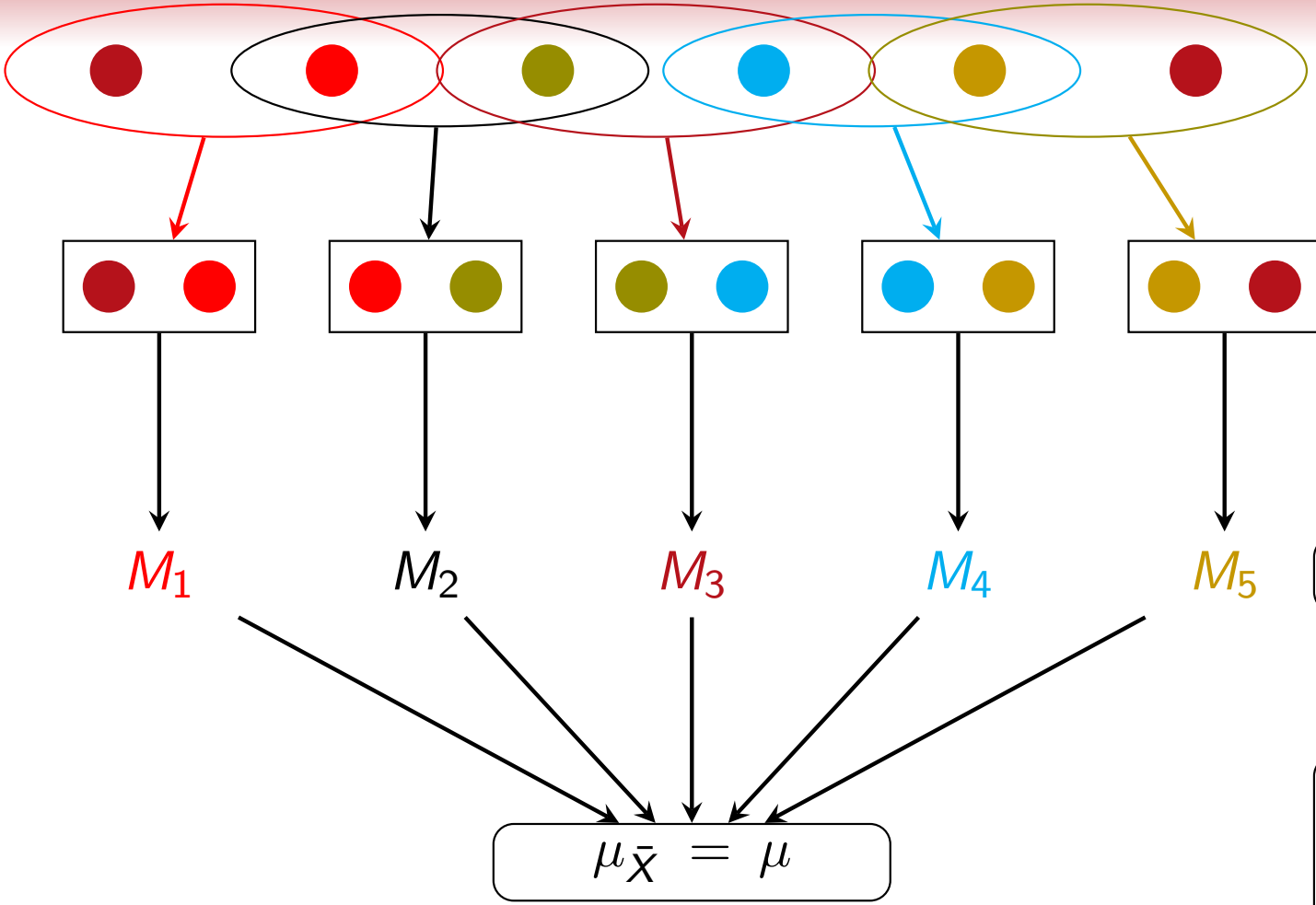
Popolazion

N.B.:

Sono illustrati solo alcuni dei possibili k campioni


Popolazion
Campion


Popolazion
Campion
Statistica
M_1
M_2
M_3
M_4
M_5



N.B.:

Sono illustrati solo alcuni dei possibili k campioni