

Decision Science as a Tool for Child Placement

Individual Approach: find a Family for One Child at a Time

Simultaneous Matching of Multiple Children with Families

Example 1: Rating Families Using Soft Numbers

Example 2: Simultaneous Matching

Summary

Individual Approach: Find a Family for One Child at a Time (I)

	Informal methods:
	can spot a family's unexpected advantages or drawbacks
	can handle missing or unique data
	obviously a personal approach
	can only handle a limited number of families
	to concentrate on one child or family is to ignore the rest
	slow: consumes time while children languish in institution
	depends on order children and families are considered

Individual Approach: Find a Family for One Child at a Time (II)

	Decision Support Systems
	search a large database for short list of best families
	short list can be treated personally
	missing or unique data is hard to incorporate in database
	to concentrate on one child is to ignore the rest
	slow: consumes time while children languish in institution
	depends on order children are considered

Individual Approach: Find a Family for One Child at a Time (III)

	Automated Match (for a single child)
	search a large database for best family
	fast (after initial setup period)
	missing or unique data is hard to incorporate in database
	to concentrate on one child is to ignore the rest
	depends on order children are considered
	depends on the numerical representation of data

Simultaneous Matching of Multiple Children with Families (I)

	Informal methods:
	can spot a family's unexpected advantages or drawbacks
	can handle missing or unique data
	obviously a personal approach
	Only possible for very small groups
	Information overload and mental fatigue
	Very slow

Simultaneous Matching of Multiple Children with Families (II)

	Formal Methods
	Search databases of families and children
	Independent of order
	Fast (after initial setup period)
	Best possible use of opportunities
	"Best" is as defined by numeric representation
	Missing or unique data is hard to incorporate in database

Example 1: Rating Families Using Soft Numbers

Ten Families are Rated by Percentage on Seven Attributes

The Importance of the Attributes are Rated Differently by Two Different Authorities

Because Attributes are Correlated, the Importance Weights Don't Make Much Difference

Ten Families are Rated by Percentage on Seven Attributes

	1. Committed to parenting	2. Parenting skills	3. medical	4. education	5. parenting environment	6. attachment	7. genetic relation
Family 1	80%	100%	92%	67%	100%	0%	100%
Family 2	30%	80%	100%	67%	100%	100%	100%
Family 3	100%	73%	46%	50%	0%	100%	100%
Family 4	20%	53%	63%	67%	50%	0%	100%
Family 5	15%	47%	100%	100%	50%	0%	0%
Family 6	40%	67%	79%	50%	50%	0%	0%
Family 7	55%	100%	54%	33%	50%	0%	0%
Family 8	5%	0%	0%	0%	0%	0%	100%
Family 9	0%	13%	79%	33%	50%	0%	0%
Family 10	10%	60%	29%	33%	50%	0%	0%

The Importance of The Attributes are Rated Differently by Two Different Authorities

	Rating 1	Rating 2	Low	1
1. Committed to parenting	Critical	High	Medium	2
2. Parenting skills	Low	High	High	3
3. medical	High	Medium	Critical	4
4. education	Medium	Low		
5. parenting environment	Medium	High		
6. attachment	Low	Critical		
7. genetic relation	Critical	Low		

Because the Attributes are Correlated,
The Importance Weights Don't Make a Major Difference

	Rated by Authority 1		Rated by Authority 2	
	Score	Rank	Score	Rank
Family 1	14.3	1	11.9	2
Family 2	13.3	2	14.0	1
Family 3	12.1	3	11.6	3
Family 4	9.5	4	6.6	6
Family 5	7.1	5	6.4	7
Family 6	6.6	6	6.8	5
Family 7	6.5	7	7.6	4
Family 8	4.20	8	1.2	10
Family 9	4.18	9	3.8	9
Family 10	3.5	10	4.5	8

Example 2: Simultaneous Matching

The One Best Match Blocks the Best Overall Match

Children Database, Families Database

Calculating a Soft Match Score

Calculated Soft Matches for All Child--Family Pairs

The Overall Best Match Doesn't Include the Two Best Matches

The One Best Match Blocks the Best Overall Match

Potential Match	Family 1	Family 2
Child A	4	3
Child B	3	1

Placement	Family 1	Family 2	
Child A		1	1
Child B	1		1
	1	1	

Placement Match	Family 1	Family 2
Child A		3
Child B	3	

Total Match Quality **6**

Child Database

1	2	3	4	5	6	7			
#	CHILD NAME	Siblings	M=1 F=-1	AGE in Months	Country	1=Healthy -1=Severe		Ideal age	
1	Joseph	0	1	14.1	Uni	1		Bul	25
2	Elena	0	-1	9.1	Ukr	0		Chi	27
3	Su	0	-1	36.5	Chi	1		Gua	29
4	Jos	0	1	6.8	Gua	0		Kaz	31
5	Georgi	0	1	13.2	Bul	1		Ukr	33
6	Robe	1	1	20.4	Gua	1		Uni	35
7	He	0	-1	14	Ukr	-1			
8	Yun	0	1	8	Chi	1			
9	Lidi	0	-1	27	Bul	1			
10	Ana	0	-1	9	Kaz	1			
11	Linda	2	-1	11	Uni	0			
12	Elena	0	-1	7.2	Kaz	1			

Family Database

1	2	3	4	5	6	7	8
#	Family name	Age1	Age2	# of Children Desired	M=1 F=-1	Preferred Child Age	1=Health -1=Severe
1	DUNN	52	48	1	0	0	0
2	JOHNSON	43	44	1	-1	48	1
3	MILLER	38	36	1	-1	0	1
4	JONES	39	41	1	0	0	1
5	DAVIS	37	28	2	0	24	1
6	SMITH	48		1	-1	0	1
7	MYERS	42	43	1	1	0	1
8	WILSON	57	51	2	0	0	1
9	GOLDMAN	40		1	-1	0	1
10	COHEN	50	44	1	-1	0	1
11	MORRIS	44	45	2	0	0	1
12	CAMPBELL	42	42	1	-0.5	0	1

Calculating a Soft Match Score

	A	B	C	D	E	F	G	H
1	1	2	3	4	5	7	6	
2	#	CHILD NAME	Siblings	M=1*F=- 1	AGE in Months	1=Healthy*-1= Severe	ideal parent age	
3	1	Joseph	0	1	14.1	1	35	
4		Group Size	1			Country	Uni	
5								
6	1	2	5	6	7	8	3	4
7	#	Family name	# Children Desired	M=1*F=- 1	Preferred Child Age	1=Healthy*-1= Severe	Age1	Age2
8	7	MYERS	1	1	1	1	43	43
9								
10					13.1		1	1
11		Matches	1	1	0	1	1	
12		Weights	2	3	4	5	1	
13		Overall match	10.77142857					

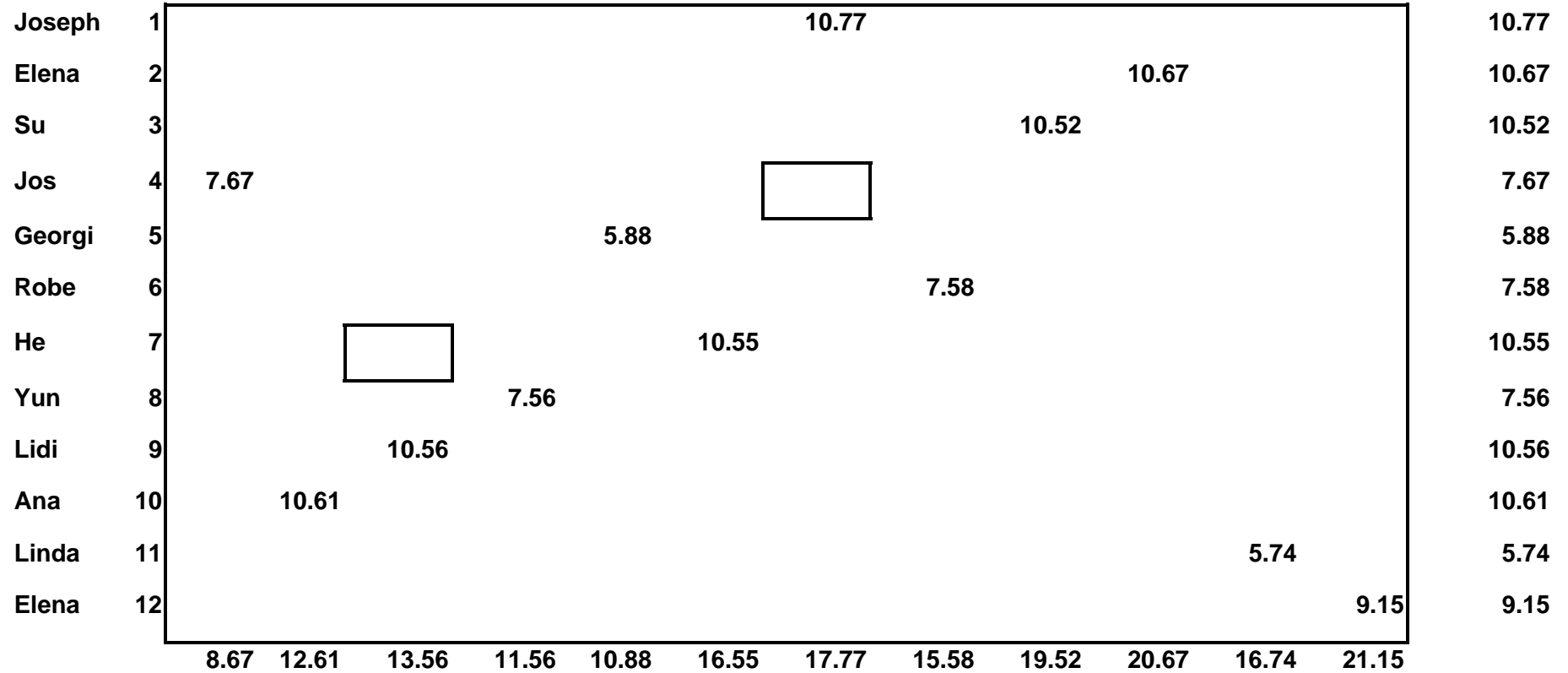
	A	B	C	D	E	F	G	H
10					=ABS(E8-E3)		=1-ABS(\$G\$3-G8)/\$G\$3	=1-ABS(\$G\$3-H8)/\$G\$3
11		Matches	=1-ABS(C4-C8)	=IF(D3=0,1,D3*D8)	=(E10<=1)+(E10<=2))/2	=0+(F8>=F3)	=MAX(G10:H10)	
12		Weights	2	3	4	5	1	
13		Overall match	=SUMPRODUCT(C11:G11,C12:G12)					

Calculated Soft matches for all
Child--Family Pairs

		DUNN	JOHN SON	MILLER	JONES	DAVIS	SMITH	MYERS	WILSON	GOLD MAN	COHEN	MORRIS	CAMP BELL	7
	10.77	1	2	3	4	5	6	7	8	9	10	11	12	
Joseph	1	2.63	4.77	4.97	7.89	5.94	4.63	10.77	5.54	4.86	4.74	5.74	6.30	
Elena	2	7.55	10.70	10.91	7.82	5.88	10.55	4.70	5.45	10.79	10.67	5.67	9.23	
Su	3	2.22	10.41	10.67	7.56	5.96	10.22	4.41	5.11	10.52	10.37	5.37	8.94	
Jos	4	7.67	4.81	5.00	7.92	5.97	4.67	10.81	5.58	4.89	4.78	5.78	6.33	
Georgi	5	2.08	4.28	4.56	7.44	5.88	4.08	10.28	4.96	4.40	4.24	5.24	5.82	
Robe	6	0.67	2.81	3.00	5.92	7.97	2.67	8.81	7.58	2.89	2.78	7.78	4.33	
He	7	7.55	10.70	10.91	7.82	5.88	10.55	4.70	5.45	10.79	10.67	5.67	9.23	
Yun	8	2.22	4.41	4.67	7.56	5.96	4.22	10.41	5.11	4.52	4.37	5.37	5.94	
Lidi	9	2.08	10.28	10.56	7.44	5.88	10.08	4.28	4.96	10.40	10.24	5.24	8.82	
Ana	10	2.45	10.61	10.84	7.74	5.90	10.45	4.61	5.35	10.71	10.58	5.58	9.15	
Linda	11	3.63	6.77	6.97	3.89	5.94	6.63	0.77	5.54	6.86	6.74	5.74	5.30	
Elena	12	2.45	10.61	10.84	7.74	5.90	10.45	4.61	5.35	10.71	10.58	5.58	9.15	

The Overall Best Match Doesn't Include the Two Best Matches

DUNN JOHN MILLER JONES DAVIS SMITH MYERS WILSON GOLD COHEN MORRIS CAMPB
 SON 1 2 3 4 5 6 7 8 MAN 9 10 11 ELL 12



Flatter, Faster Organizations

Senior Decision Makers Closer to the Children

Focus on Exceptions rather than Administration

Ideally, Move Middle Managers to the Front Line

Speed Matters!

"The Best is the Enemy of the Good" - Voltaire