Example: Crew Scheduling

Set up the Crew Scheduling model in Excel:

	A	B	C	D	E
1	**Crew Scheduling**				
3	Worker Satisfaction				
6		Weights	Sch Limit	Sch Limit Targets	Variables
7	Bob	1			
8		4			
9		5			
10	Bill	3			
11		3			
12		4			
13	Joe	6			
14		3			
15		1			
16	Sylvia	1			
17		5			
18		4			
19	Joann	2			
20		2			
21		6			
22	Mary	3			
23		6			
24		1			
26				Number working	
28				Requirements	

Proposed Two-Week Schedules (columns F–AV, days 1–14 for each shift)

Row	Day shift (1's on days)	Evening shift (1's on days)	Night shift (1's on days)
7 (Bob)	1 2 3 4 5, 8 9 10 11 12		
8	1 2 3 4 5	8 9 10 11 12	
9		1 2 3 4 5	9 10 11 12 13
10 (Bill)	3 4 5 6 7		
11	9 10 11 12 13	3 4 5 6 7	
12			3 4 5 6 7, 10 11 12 13 14
13 (Joe)			1 2, 6 7 8 9 10, 12 13 14
14		7 8, 11 12, 14	1 2, 6 7 8
15		1 2, 6 7 8 9 10, 12 13 14	
16 (Sylvia)		1 2 3 4, 6	7 8 9 10, 14
17	1 2 3 4, 6	6 7 8 9, 14	
18	5 6 7 8, 14	1 2 3 4 5, 7	
19 (Joann)	1 2 3 4 5, 8 9 10 11 12		
20		1 2 3 4 5, 8 9 10 11 12	
21			1 2 3 4 5, 8 9 10 11 12
22 (Mary)	1 2 3, 6 7	7 8 9, 12 13	
23			1 2 3, 6 7 8 9 10, 13 14
24		1 2 3, 6 7 8 9 10, 13 14	
28 (Requirements)	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1

Example: Crew Scheduling

Solver Solution:

Crew Scheduling

Worker Satisfaction: **26**

Worker	Weights	Sch Limit	Sch Limit Targets	Variables
Bob	1	1	1	0
	4			1
	5			0
Bill	3	1	1	0
	3			1
	4			0
Joe	6	1	1	1
	3			0
	1			0
Sylvia	1	1	1	0
	5			0
	4			1
Joann	2	1	1	0
	2			0
	6			1
Mary	3	1	1	1
	6			0
	1			0

Proposed Two-Week Schedules

Row	Day shift 1–14	Evening shift 1–14	Night shift 1–14
Bob (7)	1 1 1 1 1 _ 1 1 _ 1 _ 1 _ 1		
(8)	1 1 1 1 1	_ _ _ _ _ _ 1 1 _ 1 _ 1 _ 1	
(9)		1 1 1 1 1	_ _ _ _ _ 1 1 _ 1 _ 1 _ 1
Bill (10)	_ 1 1 1 1 1	_ _ _ _ _ _ _ 1 _ 1 _ 1 _ 1 1	
(11)	_ _ _ _ _ 1 _ 1 _ 1 _ 1 _ 1	_ 1 1 1 1 1	
(12)			_ _ _ _ _ _ 1 1 1 1 1 _ 1 _ 1 _ 1 _ 1 1
Joe (13)			1 1 _ _ _ 1 1 1 1 1 _ _ _ 1 _ 1 1
(14)		_ _ _ _ _ _ _ _ _ 1 1 _ _ 1 _ 1 1	1 1 _ _ _ 1 1 1
(15)		1 1 _ _ 1 1 1 1 1 _ _ _ 1 _ 1 1	
Sylvia (16)		1 1 1 1 _ 1	_ _ _ _ _ _ _ 1 1 _ 1 1 _ 1
(17)	1 1 1 1 _ 1	_ _ _ _ _ 1 1 _ 1 1 _ _ 1	
(18)	_ 1 1 _ 1 1	1 1 1 1 1 _ 1	
Joann (19)	_ 1 1 1 1 1 _ _ 1 1 1 1 1		
(20)		1 1 1 1 1 _ _ 1 1 1 1 1	
(21)			1 1 1 1 1 _ _ 1 1 1 1 1
Mary (22)	1 1 1 _ _ 1 1	_ _ _ _ _ _ _ 1 1 1 _ _ 1 1	
(23)			1 1 1 _ _ 1 1 1 1 _ 1 _ 1 1
(24)		1 1 1 _ _ 1 1 1 1 _ 1 _ 1 1	

	Day shift 1–14	Evening shift 1–14	Night shift 1–14
Number working	2 2 2 1 1 1 1 1 2 2 1 1 2 1	1 2 2 1 1 2 2 2 2 1 1 1 1 1	1 2 1 1 2 2 1 1 2 1 1 2 2 1
	>= >= >= >= >= >= >= >= >= >= >= >= >= >=	>= >= >= >= >= >= >= >= >= >= >= >= >= >=	>= >= >= >= >= >= >= >= >= >= >= >= >= >=
Requirements	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1