

Problem

- Large quantity of draws must be completed in a day
- Large hospital
- No set path the phlebotomists take to complete orders = disorganized





Model

Floor/Unit	Route	8	9	10	11	12	13	14	15	16	17	18	19	20
BASA8	Red	0.33	2.17	1.00	1.33	0.00	3.50	1.50	1.00	1.00	0.33	0.00	0.00	0.67
BASTRAB	Yellow	13.00	1.00	3.17	5.00	1.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00
BASA4	Red	0.83	1.17	3.00	1.50	1.17	1.00	0.83	2.00	1.17	0.17	0.67	0.17	0.00
BASB2N	Yellow	1.67	0.33	0.33	0.17	1.33	0.67	0.50	0.67	0.17	0.00	0.00	0.17	0.00
BASC5	Yellow	1.17	2.50	0.83	0.17	0.67	1.83	0.17	1.00	0.67	0.50	0.00	0.33	1.83
BASA7	Red	1.50	1.17	1.83	0.17	1.00	0.00	0.83	0.50	0.17	0.67	0.00	0.67	0.50
BASB2S	Yellow	1.00	0.17	0.50	1.50	1.50	1.33	1.17	0.67	0.33	0.00	0.17	0.17	0.50
BASB4S	Green	0.00	0.33	1.00	0.67	1.83	0.00	0.00	0.17	0.33	0.00	0.00	0.00	0.33
BASB4N	Green	0.00	0.50	1.17	1.67	1.17	0.33	0.67	0.00	0.33	0.00	0.33	0.00	0.50
BASB3S	Green	2.00	0.00	0.17	0.67	0.17	0.00	1.00	0.50	0.33	0.50	0.17	0.00	0.33
BASB3N	Green	0.00	0.50	0.50	0.00	1.17	0.00	0.50	0.00	0.33	0.67	0.67	1.67	0.00
BASBD	Green	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.83	0.17	0.00	0.50
BASCVIC	Green	0.17	0.67	0.33	0.00	0.67	1.33	0.00	0.50	0.00	0.00	0.00	0.00	0.00
BASW4S	Blue	0.50	0.00	0.00	0.00	0.17	0.00	0.33	0.00	0.00	0.00	1.50	0.00	0.00
BASICUA	Blue	0.00	0.17	0.33	0.00	0.33	1.33	0.00	0.00	0.17	0.33	0.33	0.00	0.00
BASSB	Blue	0.00	0.00	0.00	0.00	0.00	0.50	0.00	1.00	0.50	0.17	0.00	0.00	0.00
BASADYA	Blue	0.00	0.17	0.00	0.00	0.33	0.33	0.00	0.50	0.00	0.00	0.00	0.00	0.50
BASW4N	Blue	0.00	0.33	0.00	0.00	1.33	0.33	0.17	0.00	0.17	0.00	0.00	0.00	0.00
BASCCUC	Blue	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVITA	Blue	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.17	0.00	0.00	0.00
BASD	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.33	0.00	0.00	0.00
BASW2N	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00	0.00
BASOR	Blue	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASW3N	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
BASLDAW	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BASW3S	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.83	1.67	0.83	0.00	0.00	0.17	0.00
BHFWCL	Blue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Red	1	4	6	9
Yellow	2	5	7	10
Green	3		8	

	Done	Gone To Help
Red Route		
Yellow Route		
Green Route		
Blue Route		



Results

Demand Based on Current Data

	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
# Phlebotomists	5	5	5	5	5	5	8	8	7	7	6	6	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Red	1	0	2	0	1	1	2	0	2	0	2	0	1	2	1	2	1	0	2	0	2	0	2	0	2	0
Yellow	1	5	1	2	1	1	2	0	2	0	1	5	1	0	1	0	1	0	1	0	1	0	1	0	1	0
Green	1	0	1	0	1	1	1	0	1	7	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
Blue	2	0	1	2	2	0	3	0	2	0	2	0	1	2	1	2	1	4	1	5	1	5	1	5	1	0

Statistics					
	< 30 min	% < 30 min	< 60 min	% < 60 min	> 60 min
Red	10	77%	3	23%	0
Yellow	8	62%	5	38%	0
Green	11	85%	2	15%	0
Blue	5	38%	8	62%	0

Routes Completed Under 30 Min	34	65%
Routes Completed Under 60 Min	18	35%
Routes Completed Over 60 min	0	0%

Demand x 1.5

	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
# Phlebotomists	5	5	5	5	5	5	8	8	7	7	6	6	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Red	1	1	1	2	1	1	2	0	2	0	2	0	1	1	1	1	1	2	1	0	2	0	1	0	2	0
Yellow	1	1	1	2	1	1	1	4	2	0	1	2	1	1	1	1	1	0	1	0	1	0	1	0	1	5
Green	1	1	1	0	1	1	1	4	1	5	1	0	1	1	1	0	0	1	1	0	1	0	1	0	1	0
Blue	2	0	2	0	2	0	4	0	2	0	2	3	1	1	2	0	2	0	2	0	1	5	2	0	1	0

Demand x 2

	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
# Phlebotomists	5	5	5	5	5	5	8	8	7	7	6	6	4	4	4	4	4	4	5	5	5	5	5	5	5	5
Red	1	1	1	1	1	2	1	2	2	0	1	1	1	1	1	1	1	1	1	0	1	0	1	0	2	0
Yellow	1	1	1	1	1	2	1	2	1	3	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	1
Green	1	1	1	1	0	1	1	2	1	3	1	1	0	0	0	0	0	0	1	4	1	0	1	4	1	1
Blue	3	0	2	0	3	0	5	0	3	0	3	0	2	0	2	2	2	2	2	0	2	0	2	0	1	1