

Example: Water Resource in Central London

Getting initial solution: *Norwest Corner rule*
Vogel's approximation method
Russel's approximation method

	1	2	3	4	5	supp	u_i
1	16	16	13	22	17	50	
2	14	14	13	19	15	60	
3	19	19	20	23	M	50	
4(D)	M	0	M	0	0	50	
dem	30	20	70	30	60		
v_j							

The Transportation Simplex Method

Initialization: Construct an initial BFS by one of the procedure outlined in previous lecture.

Optimality Test: Derive u_i and v_j by selecting the row having the largest number of allocations, setting its $u_i = 0$, then solving the set of equations $c_{ij} = u_i + v_j$ for each (i,j) such that x_{ij} is basic. If $c_{ij} - u_i - v_j \geq 0$ for every (i,j) such that x_{ij} is *nonbasic*, then the current solution is optimal.

1. Determine the entering basic variable: Select the nonbasic variable x_{ij} having the *largest* (in absolute terms) *negative* value of $c_{ij} - u_i - v_j$.
2. Determine the leaving basic variable: Identify the chain reaction required to retain feasibility when the entering basic variable is increased. From the donor cells, select the basic variable having the *smallest* value.
3. Determine the new BFS: Add the value of the leaving basic variable to the allocation for each recipient cell. Subtract this value from the allocation for each donor cell.

For basic x_{ij} , $c_{ij} = u_i + v_j$. Solve for u_i and v_j .

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			40		10		
2	14	14	13	19	15	60	
	30		30				
3	19	19	20	23	M	50	
	0	20		30			
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