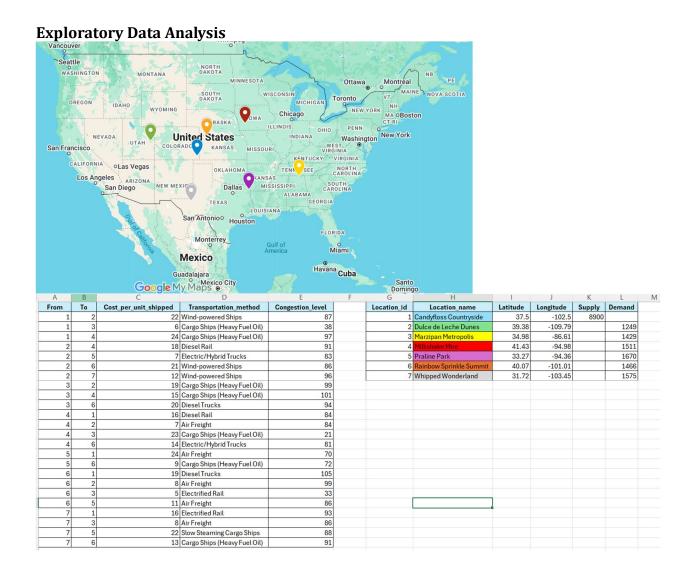
# Module 10 - MOLP



#### **Model Formulation**

#### MIN:

22X12+6X13+24X14+18X24+7X25+21X26+12X27+19X32+15X34+20X36+16X41+7X42+23X43+14X46+24X51+9X56+19X61+8X62+5X63+11X65+16X71+8X73+22X75+13X76

### **Model Optimized for Equally Weighted Objectives**

Minimize transportation	\$ 211,325.12					
Minimize distance	\$ 96,283.85					
Maximize eco-friendliness	7090.98					
	. 000100					
Minimize congestion	11992.02					
Objectives	Totals	Target Value	Deviation	% deviation	Weight	Weighted deviation %
Total transportation Cost	\$ 211,325.12	\$196,581.00	\$ 14,744.12	8%	1	0.075002775
Total Distance Traveled	\$ 96,283.85	\$82,502.03	\$ 13,781.82	17%	1	0.167048212
Eco-Friendliness	7090.984933	6076.00	\$ 1,014.98	17%	1	0.167048212
Congestion levels	11992.01507	11578.00	\$ 414.02	4%	1	0.035758772
MiniMax Variable	0.167048212					

The solution to this problem when finding the MiniMax variable is 0.167.

## **Model with Stipulation**

Minimize transportation	\$ 202,216.94						
Minimize distance	\$ 87,232.67						
Maximize eco-friendliness	7817.98						
Minimize congestion	11578.00						
Objectives	Totals	Target Value	- 0	Deviation	% deviation	Weight	Weighted deviation %
Total transportation Cost	\$ 202,216.94	\$196,581.00	\$	5,635.94	3%	10	0.286698342
Total Distance Traveled	\$ 87,232.67	\$82,502.03	\$	4,730.64	6%	5	0.286698342
Eco-Friendliness	7817.979128	6076.00	\$	1,741.98	29%	1	0.286698342
Congestion levels	11578	11578.00	\$	-	0%	1	0
MiniMax Variable	0.286698342						

After altering the weights to match what matters most to me, I put the highest weight on total transportation cost because I feel as though that is the most important to me. I then put a weight of 5 on Total Distance Traveled because that was the next important to me. For the last 2 I left them the same because they are not very important to me in this scenario. This model can be used for many different scenarios and it's one to know.