Module 02 – Transportation Modeling

Exploratory Data Analysis

*In this section, you should perform some data analysis on the data provided to you. Please format your findings in a visually pleasing way and please be sure to include these cuts:*

* *The locations involved in the analysis (id -> name) and specify if they are a source or a destination*

*A table with different colored text

AI-generated content may be incorrect.*

* *A table of the average cost between source and destination (for the sake of this assignment, we are dealing with sugar-miles similar to the bushel-mile example from the textbook)*

A screenshot of a computer screen

AI-generated content may be incorrect.

Model Formulation

*Write the formulation of the model into here prior to implementing it in your Excel model. Be explicit with the definition of the decision variables, objective function, and constraints*

*= Butterscotch Bluffs*

*= Churro Chamber*

*= Chocolate River Rapids*

*= Buttercream Beach*

*= Peppermint Peninsula*

*= Licorice Lanes*

*= White Chocolate Wasteland*

*= Peanut Butter Parlor*

*= Malted Milk Manor*

*= Maple Fudge Forest*

Max: 0.14\*X11+0.12\*X12+0.06\*X13+0.12\*X14+0.16\*X15+0.12\*X16+ 0.11\*X21+0.12\*X22+0.14\*X23+0.12\*X24+0.07\*X25+0.15X26+ 0.09\*X31+0.09\*X32+0.07\*X33+0.11X34+0.10\*X35+0.11\*X36+ 0.16\*X41+0.14\*X42+0.11\*X43+0.10\*X44+0.07\*X45+0.15\*X46

Capacity Constraints

Demand Constraints

Model Optimized for Profit

*Implement your formulation into Excel and be sure to make it neat. This section should include:*

* *A screenshot of your optimized final model (formatted nicely, of course)*

*A screenshot of a computer

AI-generated content may be incorrect.*

* *A text explanation of what your model is recommending*

My model shows that overall, the minimum cost for the shipping and receiving of my candy shop is 44.86. Butterscotch Bluffs supplies 83 to white chocolate wasteland and 27 to maple fudge forest. Churro Chamber supplies mostly to Peppermint Peninsula and a little to Malted Milk Manor. Chocolate River Rapids supplies to 3 destinations which are Peppermint Peninsula, Licorice Lanes, and Maple Fudge Forest. Finally, Buttercream Beach supplies to both Peanut Butter Parlor and Malted Milk Manor. Buttercream Beach is also the only shipper to Peanut Butter Parlor.

Model with Stipulation

*Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution. What happens if you add an additional constraint to the model such that all demand MUST be met. Is the solution still feasible? If not, please explain why.*

* You would get an error
* If demand needs to be met it gives you an error because there isn’t enough material to satisfy all the demands of all the destinations. There isn’t enough capacity to meet all the demand that each destinations needs. The demand is greater than the capacity so it would be infeasible.