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Mathematical Model for finding Locations and Sizes of Company Warehouses

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Mathematical Model for finding Locations and Sizes of Company Warehouses

Michelle Caruso, Benjamin Cheng, Jordan Kiss

A large Canadian company with headquarters in the Greater Toronto area handles approximately 20,000 products provided by about 150 vendors supplying over 200 branches. To minimize transportation and storage costs, this company is planning to open a second warehouse. Decisions like this are often made with the aid of the solution to an mathematical optimization problem. This project will determine the size and location of its next warehouse. In this project, we will formulate and solve this large optimization problem taking into account fixed land and building costs, variable operation costs, and transportation costs. We will suggest the new location and determine which branches will be supplied by the new and existing warehouses. Preliminary research for the model has determined necessary and sufficient variable constraints which will yield an accurate solution.