**Project for ADM 2624,**

**A Transportation Problem:**

This project replaces Mid-term 3 & it is thus worth 24 marks. This is an individual project, so outside help is not permitted. Your task concerns the optimization of a transportation problem with three warehouses, and five customer locations in the state assigned to you below. You need to perform the following tasks:

1. Determine the populations of the customer locations. Their demands are assumed to be a fixed proportion (e.g., 1/1,000 of the population).
2. Determine the total demand by adding up the demands at all customer locations.
3. Determine the supplies at the warehouses as 50%, 30%, & 20% of the total demand, which makes it a balanced transportation problem. As a simple example. If you have determined that the customer sites have populations of 30,000, 20,000, 40,000, 30, 000, & 20,000, that means that the total population is 140,000. Using a factor of 1/1,000 (you can use any other factor), we can assume the total demand to be 140. Your three warehouses then have supplies of 70, 42, & 28 units, respectively.
4. Determine the distances (a proxy for costs) between all warehouse-customer locations. This may require the use of Google maps, or any other distance-measuring program or device.
5. Formulate a cost-minimization problem with *LINGO*, solve it, & make your recommendations on the basis of the printout, along with some meaningful sensitivity analyses. For instance, you could check out the maps & try out a new location for a warehouse as either an additional warehouse or as a replacement (replacing which existing warehouse?) You can (& should) also make some general comments regarding the solution, including what you believe could be changed, what you like & do not like about the solution. All comments must be supported by solid arguments, e.g., never write “I feel…”. It is important that you clearly discuss the assumption that you make in detail.

Your findings should be written up in a maybe 3-5 page report, which includes the problem statement, what you did (data collection, solutions, all things you encountered in the process). The formulation of the problem (you can copy it directly from *LINGO* into Word), successive printouts, sites you used to determine the warehouse-customer distances, and all other material belong in appendices (which are not included in the 3-5 pages). Much attention should be paid to the assumptions of the problem, which you should discuss properly.

*Do not forget under any circumstances* to cite all material you used & that is not you own, e.g., sources of any data that you use, & any other information gleaned from books, articles, or the internet. The project should include a statement signed by you that states that this work is (apart from the quoted sources) your intellectual work.

. Late projects will not be accepted.

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| Student # | Warehouse locations | Customer locations |
|  |  |  |
| 3620596 | Alberta: Lloydminster, Lethbridge, Edson | Edmonton, Calgary, Red Deer, Grande Prairie, Medicine Hat |
| 3587524 | Arkansas: Searcy, Pine Bluff, Russellville | Little Rock, West Memphis, Fort Smith, Bentonville, Jonesboro |
| 3598988 | Arizona: Winslow, Gila Bend, Prescott | Holbrook, Flagstaff, Phoenix, Tucson, Nogales |
| 3620483 | BC & YT: Watson Lake, Telegraph Creek, Fort St. John | Dawson Creek, Prince Rupert, Fort Nelson, Whitehorse, Keno Hill |
| 3588462 | Southern BC: Nanaimo, Kelowna, Williams Lake | Vancouver, Victoria, Kamloops, Prince George, Pendicton |
| 3642419 | Colorado: Pueblo, La Junta, Glenwood Springs | Denver, Colorado Springs, Fort Collins, Grand Junction, Alamosa |
| 3576278 | Florida: Ocala, West Palm Beach, Fort Myers | Jacksonville, Miami, Tampa, Gainesville, Tallahassee |
| 3625840 | Illinois: Springfield, Pontiac, Champaign | Chicago, Rockford, Peoria, Bloomington, Decatur |
| 3616415 | Manitoba: Selkirk, Winkler, Neepawa | Winnipeg, Swan River, Portage-la-Prairie, Brandon, Dauphin |
| 3631305 | Minneapolis: Winona, Owatonna, Grand Rapids | Minneapolis, Duluth, St. Cloud, Rochester, Mankato |
| 3357337 | New Brunswick: Dalhousie, St. Stephen, Sackville | Fredericton, Saint John, Moncton, Bathurst, Edmundston |
| 3619649 | North Carolina: High Point, Roanoke Rapids, Hickory | Charlotte, Greensboro, Raleigh, Durham, Wilmington |
| 3616562 | North Dakota: Devils Lake, Carrington, Garrison | Bismarck, Jamestown, Minot, Williston, Grand Forks |
| 3587118 | Newfoundland & Labrador: Lethbridge, Bishop’s Falls, Stephanville Crossing | St. John’s, Corner Brook, St. Anthony, Gander, Lewisporte |
| 3404822 | New Mexico: Gallup, Bernalillo, Carlsbad | Albuquerque, Santa Fe, Las Cruces, Roswell, Lordsburg |
| 3608541 | Nova Scotia: Amherst, Port Hawkesbury, Truro | Halifax, Sydney, Liverpool, Kentville, Antigonish |
| 3621564 | Nevada: Catlin, Carson City, Tonopah | Reno, Las Vegas, Winnemucca, Elko, Ely |
| 3629604 | Ontario North: Fort Frances, Timmins, Geraldton | Sault St. Marie, Sudbury, Thunder Bay, Kenora, Wawa |
| 3652679 | Ontario South: Sarria, Peterborough, Guelph | Ottawa, Hamilton, Toronto, Barrie, London |
| 3588429 | PEI: Borden, Souris, Hunter River | Charlottetown, Tignish, Elmira, Summerville, Cavendish |
| 3580578 | Quebec: Thetford Mines, Trois Rivières, Tadoussac (on the Saguenay) | Montreal, Quebec City, Hull, Chicoutimi, Sherbrooke |
| 3620598 | South Carolina: Sumter, Orangeburg, Anderson | Columbia, Charleston, Spartanburg, Florence, Greenville |
| 3626183 | Saskatchewan: Prince Albert, Maple Creek, Melville | Regina, Moose Jaw, Yorkton, Saskatoon, Swift Current |