LAB TASK: EXLORING SPATIAL ANALYSIS (PART 2)

Situation/case/problem:

You work for a local chain of stores in the Austin, Texas area. Considering the population growth in this area, the growth of competitor store locations, and demand for your products, you have determined that a new store should be built.

These are the site criteria you will use to locate your new store:
- Must be similar in demographic profile to the store with the highest sales revenue
- Must be at least 5 miles from one of your existing stores
- Must be at least 2 miles from a competitor store
- Must be within 1 mile of a major highway.

In Part 1, you have already worked with the census data, combine block groups, integrated demographic data, and added customer locations. Please make sure you have already completed Part 1 before going through Part 2.

In this part, you are going to calculate total sales per store, find demographic profile for a store, create exclusion zones, create proposed sites, find suitable locations, find demographic profile of candidate locations, and forecast future results.

1. **Find total sales per store**

   a. Turn off the **Customers** layer. Add Stores feature class from **Site_Selection** geodatabase.

   b. Label the Stores according to STORE_ID attribute. Change the symbol, choose something bigger and different from the **Customers** point symbol *(Come on, you have done this before!)*

   c. Open the **Customers** attribute table. Now you want to calculate the total sales by store. Each customer has a sales total and the store number where the sales were made.

   d. Summarize the STORE_ID attribute using the following specifications:

      - *Calculate the sum from the SALES field*

      - *Set your output table to **Sales_Summary** in your **Site_Selection** geodatabase.*

      (Hint: Opps there is no hint this time. Now go to Help and type 'Summarize', abraacadabra!)

   e. Open the **Sales_Summary** table. Which store has the highest total sales? _____; what is the number of customers for each store? Store 1: _____; Store 2: _____.

2. Find demographic profile of a store

In this step, you will find the demographic profile of the store with the highest total sales. You will use this profile later, when you look for potential sites in which to locate the new store.

a. Select the point feature for Store 2 on your map. *(Hint: Make **Stores** the only selectable layer)*

b. Use Select By Location to select the block group polygons that are 5 miles from the store number 2. Use the following settings:
   - *Selection method: select features from*
   - *Target layer: **Block_Groups***
   - *Source layer: Stores*
   - *Check the box next to the option, Use selected features*
   - *Spatial selection method for target layer features: are within a distance of the source layer feature*
   - *(There should be 71 features selected after you have done this*

c. Open attribute table for **Block_Groups**. Calculate the STORE_ID field equal to 2 for the selected records. *(Hint: Open the Field Calculator; Because you have a table join, the Field Calculator lists each attribute prefixed with the table name.)* The STORE_ID field for all the selected records is now set to store number 2.

d. You will summarize the age and income attributes to see the demographic profile of the store's customers. Summarize the STORE_ID with the following specifications:
   - *Expand the list of summary statistics, check the Sum box for each of the Demographics.AGE and Demographics.INCOME.*
   - *Set your output table to **Store2_Summary** in your **Site_Selection** geodatabase.*

e. Add the new Store2_Summary table to the map and open it. Answer these questions:
   - What AGE attribute has the largest number of people? _____
   - What INCOME attribute has the largest number of people? _____

f.   Close the Table window, Clear your selected features, and Zoom to your **Block_Groups** layer.

3.   Create exclusion zones

In this step, you will create exclusion zones around your two stores. Part of your criteria for siting your new store concerns the proximity to existing stores. Your new store must be located more than 5 miles from an existing store.

a.   Search for and open Buffer (Analysis) tool. Complete the operation with the following specifications:

-   *Input features: Stores*

-   *Output feature class: Stores_Buffer in your Site_Selection geodatabase*

-   *Linear Unit: 5 Miles*

-   *Accept the default values for the other parameters.*

b.   The Stores_Buffer polygons are created and appear in the map. Save your map document (.mxd).

c.   This is how your output should look like: