Massachusetts Institute of Technology - Department of Urban Studies and Planning

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11.520: A Workshop on Geographic Information Systems

11.188: Urban Planning and Social Science Laboratory

Lab Exercise 6 Notes: Vector Spatial Analysis

Overview

In this exercise you will use the ***spatial analysis*** capabilities of ArcGIS to:

- Examine the location patterns of Cambridge stores by using the **'spatial join'** tools to tag store location data (bookstores, ice cream shops, record stores) with the demographic characteristics of their neighborhood. (This is a 'point-in-polygon' operation.)
- Create a half-mile **buffer** around Ames St.
- Estimate the number of young kids living near Ames Street by:
    - Creating a half-mile buffer around Ames St.
    - **Intersecting** this buffer with the Cambridge blockgroup data
    - **Apportioning** kids in each blockgroup that is split by the buffer in proportion to the block group area in the buffer

Before starting the lab, I will finish my demonstration from last Wednesday of the steps needed to determine which block groups are in which towns in the 5-town area around Cambridge.

- Strategy:
    - Can't intersect the block group layer with the town boundaries because of 'sliver' problems at the edges
    - Create a 'point' layer of the centroids of all the blockgroups in the area
        - Select blockgroup in and around the 5 towns and save to a new shapefile
        - add X,Y fields to the attribute table (as double precision numbers)
        - Use this VBA script to enter the centroid X,Y values into the new fields

```
Dim dblX As Double
Dim pArea As IArea
Set pArea = [Shape]
dblX = pArea.Centroid.X
```

        - Create a new point shapefile of these X,Y centroid points using Tools/Add-X-Y-data (after exporting a table containing these X,Y points)
    - Use the 'spatial join' tools to tag each centroid with the town that it is in

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