Toolbox to Spatial Join Tables and Classify Coffee Shop Sales Volumes

This script is designed to compute coffee shops' total volume of sales in each census tract and classify each census tract as "large" volume and "small" volume. It created an Arctool box with python scripts and performed spatial analysis on the coffee shops in Pennsylvania.

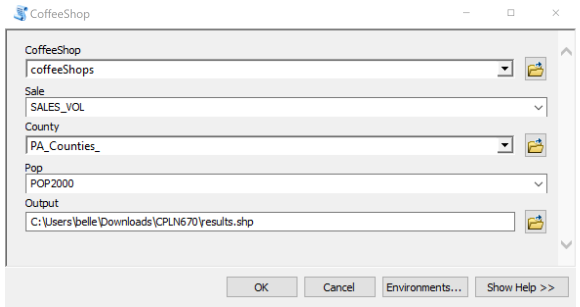


Fig 1.1 Layout of our Tool box.

NAME	POP2000	pop_1990	popgrowth	CONAME	Total_Sale	Volume
Erie	293750	287786	5964	BOSTON BEAN CAFE	18408	large
Bradford	83154	76463	6691	DUNKIN' DONUTS	1400	large
Tioga	53591	51930	1661	NIGHT & DAY COFFEE CAFE	864	small
Potter	26441	24743	1698		0	small
McKean	60363	60010	353	KAFFE SOL	960	small
Warren	63964	58708	5256	TIM HORTONS	1736	large
Wayne	86914	66846	20068	DUNKIN' DONUTS	2720	large
Susquehanna	60530	53528	7002	DUNKIN' DONUTS	1712	large
Crawford	111719	106933	4786	TIM HORTONS	1576	large
Wyoming	54443	49009	5434	DUNKIN' DONUTS	1736	large
Lackawanna	244972	244913	59	DUNKIN' DONUTS	26152	large
Elk	51694	49608	2086		0	small

Fig 1.2 Attribute Table after calculation and classification.

Fig 2.1 Distribution of coffee shops in PA, color denotes sales volume.

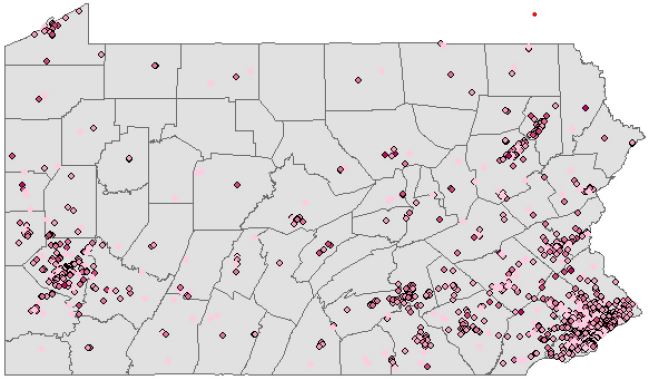
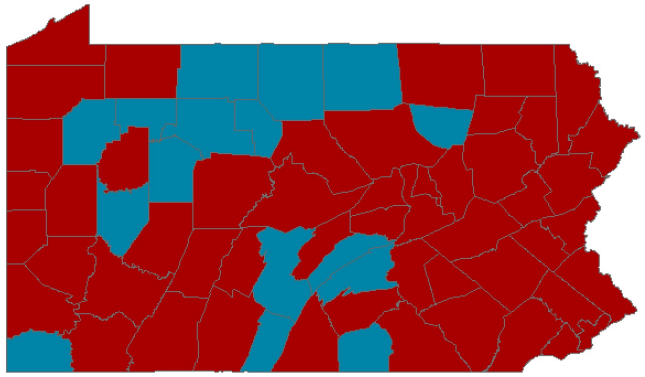


Fig 2.2 Red Tracts denote "large" volume vs. blue denote "small".



```
import sys, os, string, math, arcpy, traceback
from arcpy import env
arcpy.env.overwriteOutput = True
arcpy.env.workspace = "C:\Users\belle\Downloads\CPLN670"

if arcpy.CheckExtension("spatial") == "Available":
   try:
      arcpy.CheckOutExtension("spatial")

      #Request user input of data type = Shapefile and direction = Input
      CoffeeShop=arcpy.GetParameterAsText(0)
      arcpy.AddMessage('\n'+ "The input shapefile name is " + CoffeeShop)
      #Request user input of data type = String and direction = Input
      Field_Sale = arcpy.GetParameterAsText(1)

      County=arcpy.GetParameterAsText(2)
      Field_Pop = arcpy.GetParameterAsText(3)
      arcpy.AddMessage('\n'+ "The chosen field name is " + Field_Sale + Field_Pop)

      #Request user input of data type = Shapefile and direction = Output
      Output = arcpy.GetParameterAsText(4)
      arcpy.AddMessage('\n'+ "The output shapefile name is " + Output)

      fieldmappings = arcpy.FieldMappings()
      fieldmappings.addTable(County)
      fieldmappings.addTable(CoffeeShop)

      SaleTotal = fieldmappings.findFieldMapIndex("SALES_VOL")
      fieldmap = fieldmappings.getFieldMap(SaleTotal)
      outputfield = fieldmap.outputField
      outputfield.name = "Total_Sales"
      outputfield.aliasName = "Total_Sales"
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```
        fieldmap.outputField = outputfield
        fieldmap.mergeRule = "sum"
        fieldmappings.replaceFieldMap(SaleTotal,fieldmap)

        #Spatial join
        arcpy.SpatialJoin_analysis(County, CoffeeShop,Output,"#","#",fieldmappings)
        arcpy.AddField_management(Output, 'Volume', "TEXT",20,5)
        enumerationOfRecords = arcpy.UpdateCursor(Output)

        #Iteration
        for nextRecord in enumerationOfRecords:
            arcpy.AddMessage('\n'+ "The output shapefile name is ")
            sales = nextRecord.getValue('Total_Sale')

            if sales >= 1000:
                result = 'large'
            else:
                result = 'small'
            nextRecord.setValue('Volume',result)
            enumerationOfRecords.updateRow(nextRecord)

        del nextRecord
        del enumerationOfRecords

        #Deactivate ArcGIS Spatial Analyst License
        arcpy.CheckInExtension("spatial")

    except Exception as e:
        #Report error message if an error occurs
        arcpy.AddError("Script failed because:\t\t" + e.message)
else:
    #Report error message if license is unavailable
    arcpy.AddMessage("Spatial Analyst License is unavailable")
```