Who Taxes Me?

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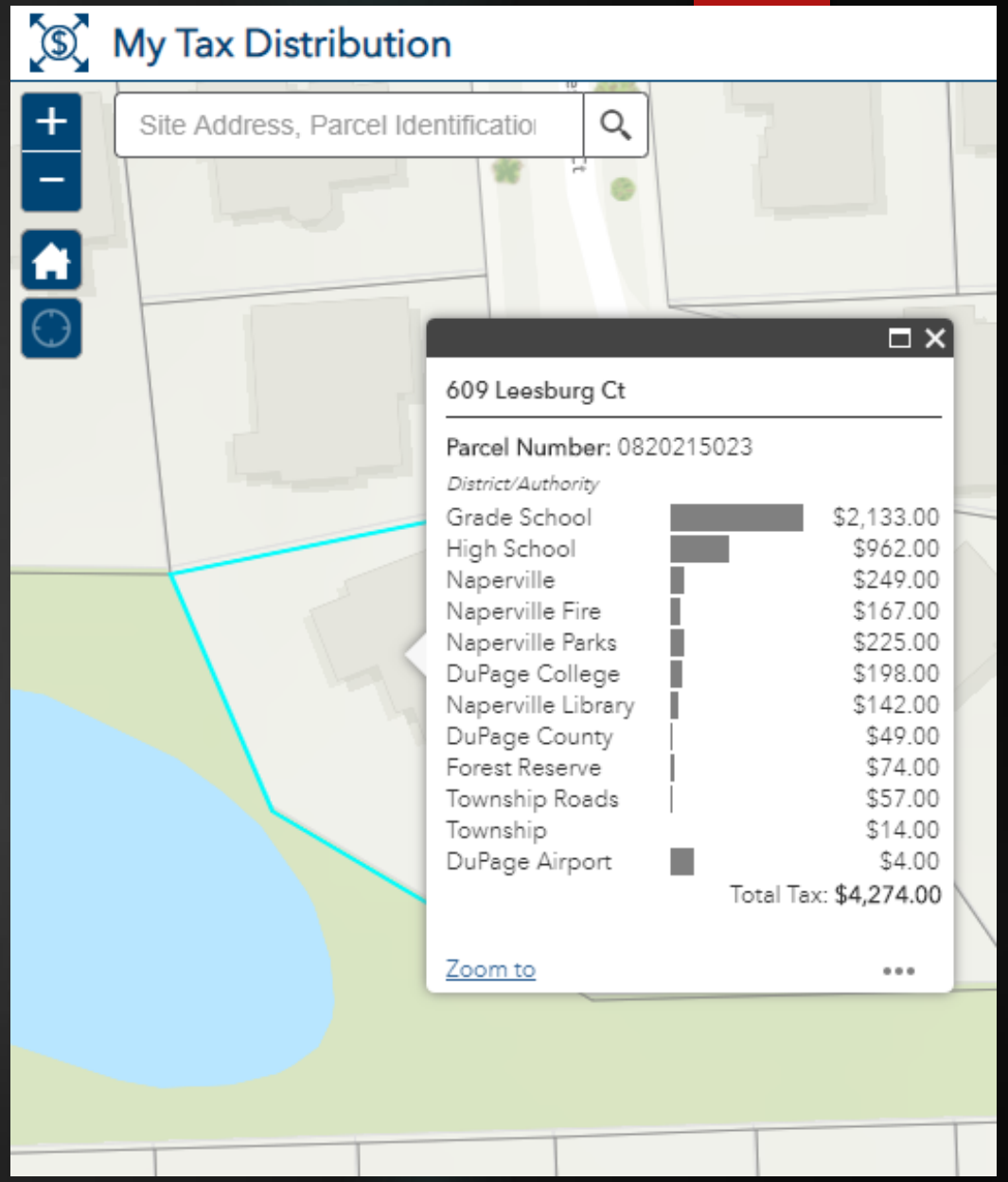
https://www.davegranlund.com/cartoons/2005/01/23/property-tax-bills/

Background

- Utah doesn't have a working statewide tax distribution website
  - Old site no longer working
  - AGRC data schema not supported by ESRI solution
- Creating solution was low priority for AGRC personnel
- Python script tool might be used as a solution

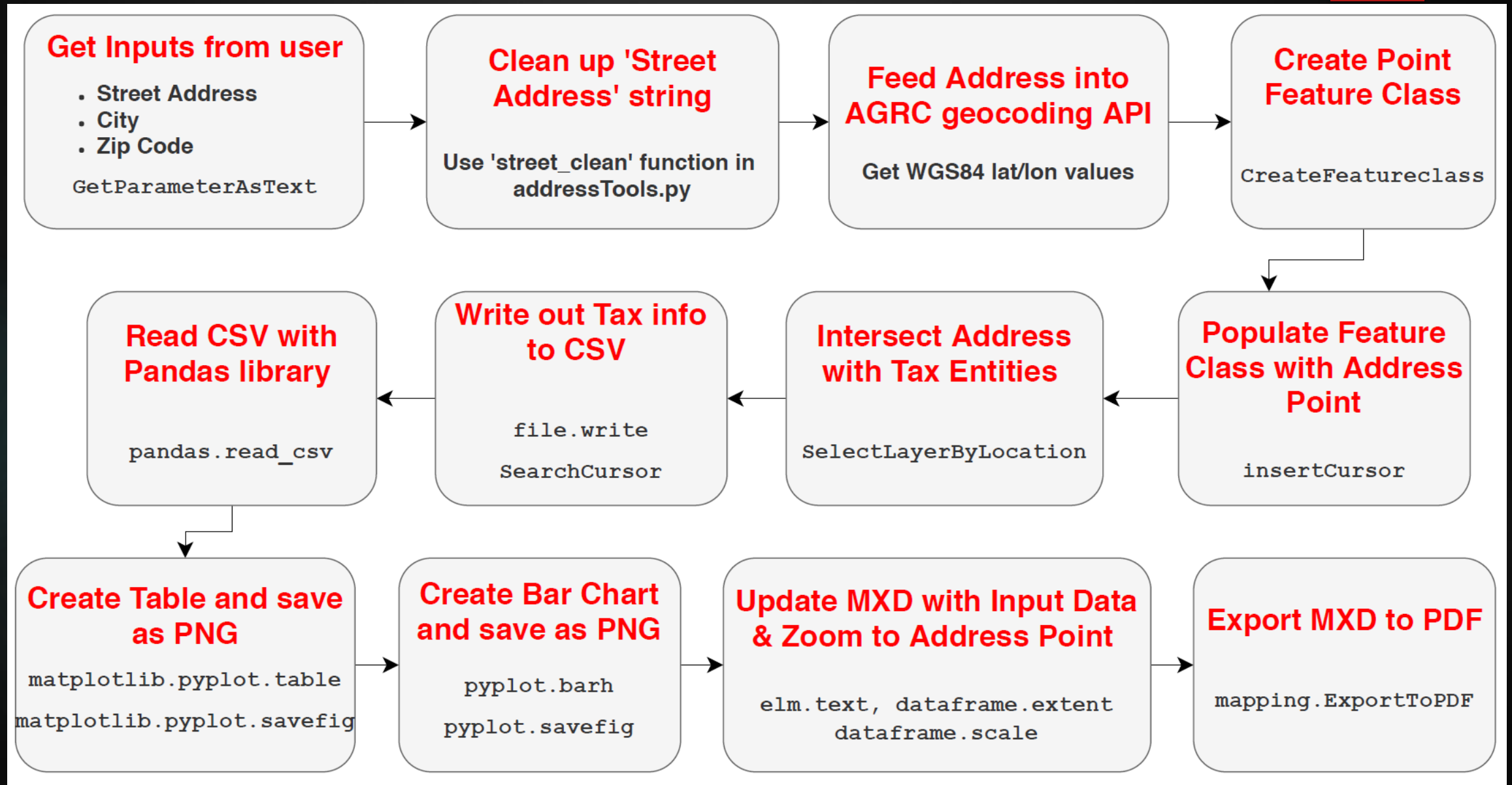


Objective

- Receive input address & property value from user
- Identify entities that levy property taxes on the parcel
- Present tax rates and annual amounts to user
- Generate simple map of location being taxed
- Output all information in a single PDF document

- Data: AGRC's "TaxEntities2017" data set

Methodology – Flow Chart



Methodology – Code

Standard Libraries used:

- ArcPy
- Numpy
- Pandas
- Matplotlib

Populating Feature Class with Address Point

```
# Create list of fields for the insertCursor
fields = ['POINT_X',
          'POINT_Y',
          'Street',
          'City',
          'Zone',
          'SHAPE@XY']

xy = (float(add_dict['Lon']), float(add_dict['Lat']))

values = [float(add_dict['Lon']),
          float(add_dict['Lat']),
          add_dict['street'],
          add_dict['city'],
          add_dict['zone'],
          xy]

# Add point to FC
print 'Adding point to feature class...'
fc = os.path.join(out_path, out_name)
cursor = arcpy.da.InsertCursor(fc, fields)

print 'Inserting point...'
print values
cursor.insertRow(values)
del cursor
```

Methodology – Code

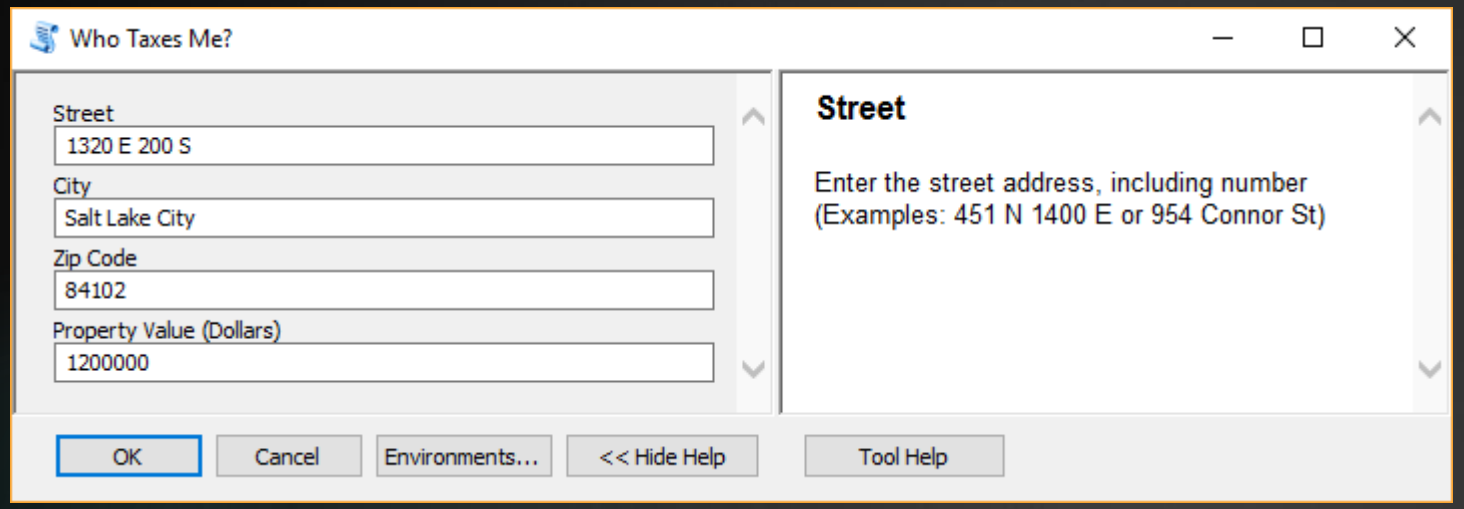
Intersecting Address Point with Tax Entities using 'Select Layer by Location'

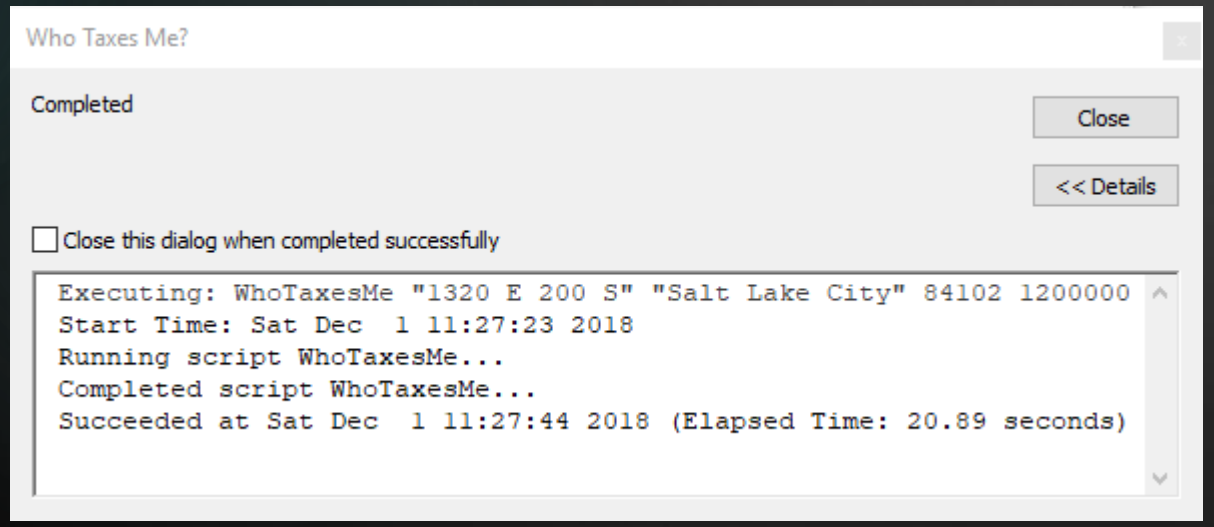
```
# Create feature layers to use with selection tool
taxLayer = arcpy.MakeFeatureLayer_management('TaxEntities', 'tax_lyr')
addressLayer = arcpy.MakeFeatureLayer_management('addressPoint', 'add_lyr')

# Then add a selection to the tax entities layer based on intersection with address point
selectInput = taxLayer
overlap_type = 'INTERSECT'
select_features = addressLayer
print "Selecting tax entities that intersect address point..."
arcpy.SelectLayerByLocation_management(selectInput, overlap_type, select_features)
select_count = int(arcpy.GetCount_management(taxLayer)[0])
print "Selection found {} Tax Entities".format(select_count)
```

```
# Open up tax_map.mxd
env.workspace = r"C:\WhoTaxesMe"
mxd = arcpy.mapping.MapDocument("tax_map.mxd")

# Set data frame, layer, extent, and scale
dataframe = arcpy.mapping.ListDataFrames(mxd)[0]
lyr = arcpy.mapping.ListLayers(mxd, 'addressPoint', dataframe)[0]
ext = lyr.getExtent()
dataframe.extent = ext
dataframe.scale = 3000

# Update map layout text based on user inputs
textlist = arcpy.mapping.ListLayoutElements(mxd, "TEXT_ELEMENT")
for elm in textlist:
    if "Address" in elm.text:
        elm.text = "Address:  {} \nCity:  {} \nZip Code:  {} "\
            .format(add_dict['street'], add_dict['city'], add_dict['zone'])
    if "Property" in elm.text:
        elm.text = "Property Value:  ${:,.0f} \nLatitude:  {:.4f} N \nLongitude:  {:.4f} W "\
            .format(propertyValue, float(add_dict['Lat']), float(add_dict['Lon']))

# Export map layout to PDF
arcpy.mapping.ExportToPDF(mxd, r"tax_map_export.pdf")
```

Manipulating MXD to update info and zoom to Address Point

Results





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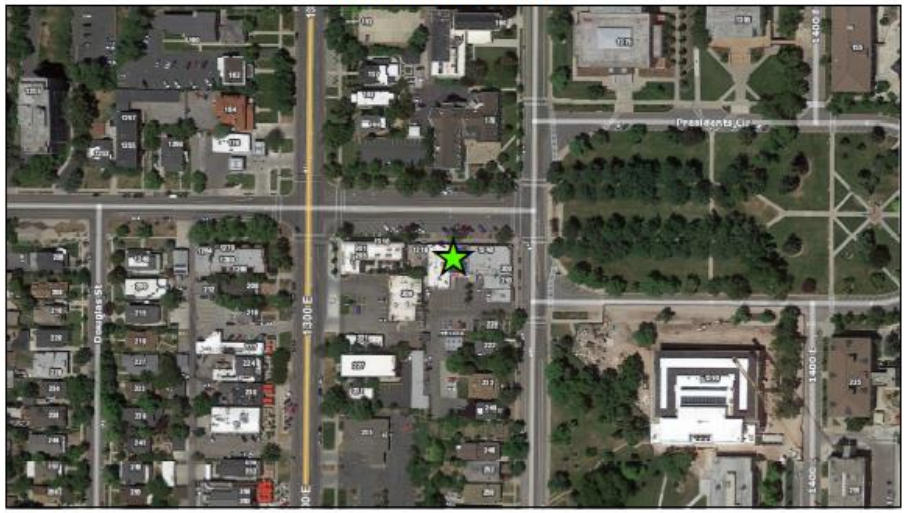
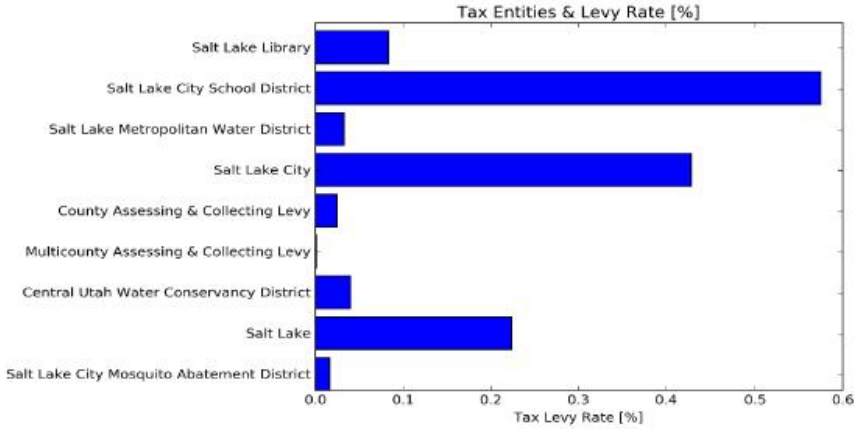


Address: 1320 E 200 S
City: Salt Lake City
Zip Code: 84102

Property Value: $1,200,000
Latitude: 40.7648 N
Longitude: -111.8529 W

Entity	Tax levy Rate [%]	Total Amount [$]
Salt Lake City Mosquito Abatement District	0.0160	$192.00
Salt Lake	0.2238	$2,685.60
Central Utah Water Conservancy District	0.0400	$480.00
Multicounty Assessing & Collecting Levy	0.0010	$12.00
County Assessing & Collecting Levy	0.0244	$292.80
Salt Lake City	0.4286	$5,143.20
Salt Lake Metropolitan Water District	0.0325	$390.00
Salt Lake City School District	0.5748	$6,897.60
Salt Lake Library	0.0834	$1,000.80



References

- Automated Geographic Reference Center (AGRC). 2018. Sales Tax Areas and Tax Entity Areas. https://gis.utah.gov/data/economy/taxingareas/ (accessed October 13, 2018).
- Environmental Systems Research Institute (ESRI). 2018a. ArcGIS Solutions for Local Government: My Tax Distribution. https://solutions.arcgis.com/local-government/help/my-tax-distribution/ (accessed October 13, 2018).
- Environmental Systems Research Institute (ESRI). 2018b. My Tax Distribution. http://statelocaltryit.maps.arcgis.com/apps/webappviewer/index.html?id=0ec8845685ac4e3480839936f48bc567 (accessed October 13, 2018).