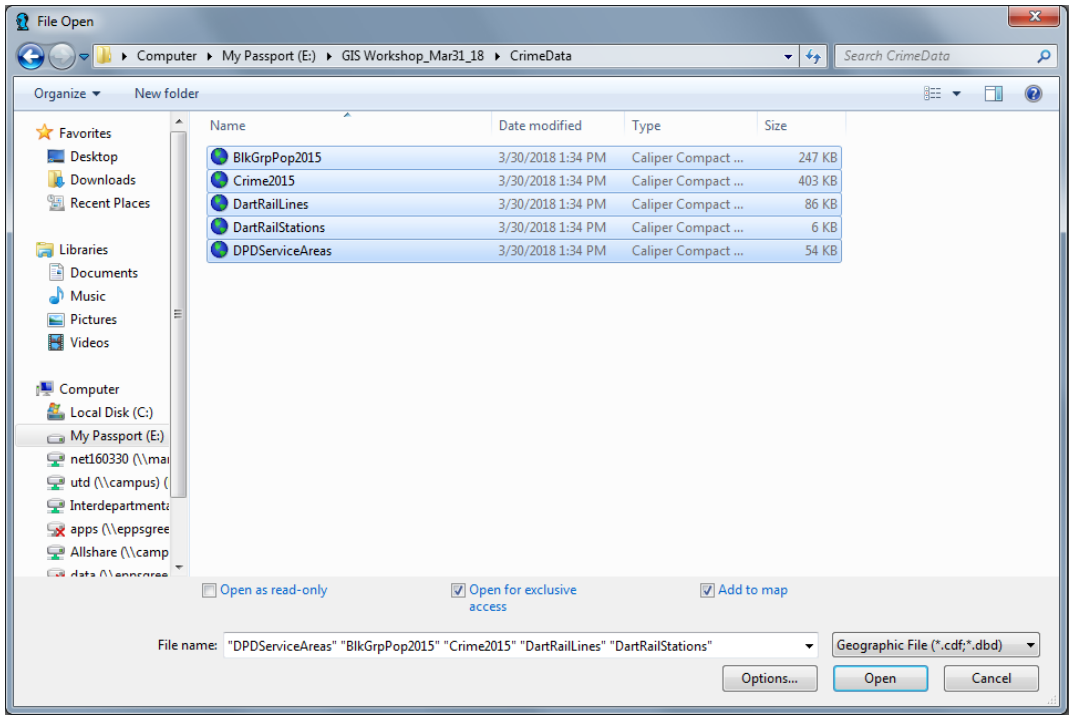
# Crime Tutorial

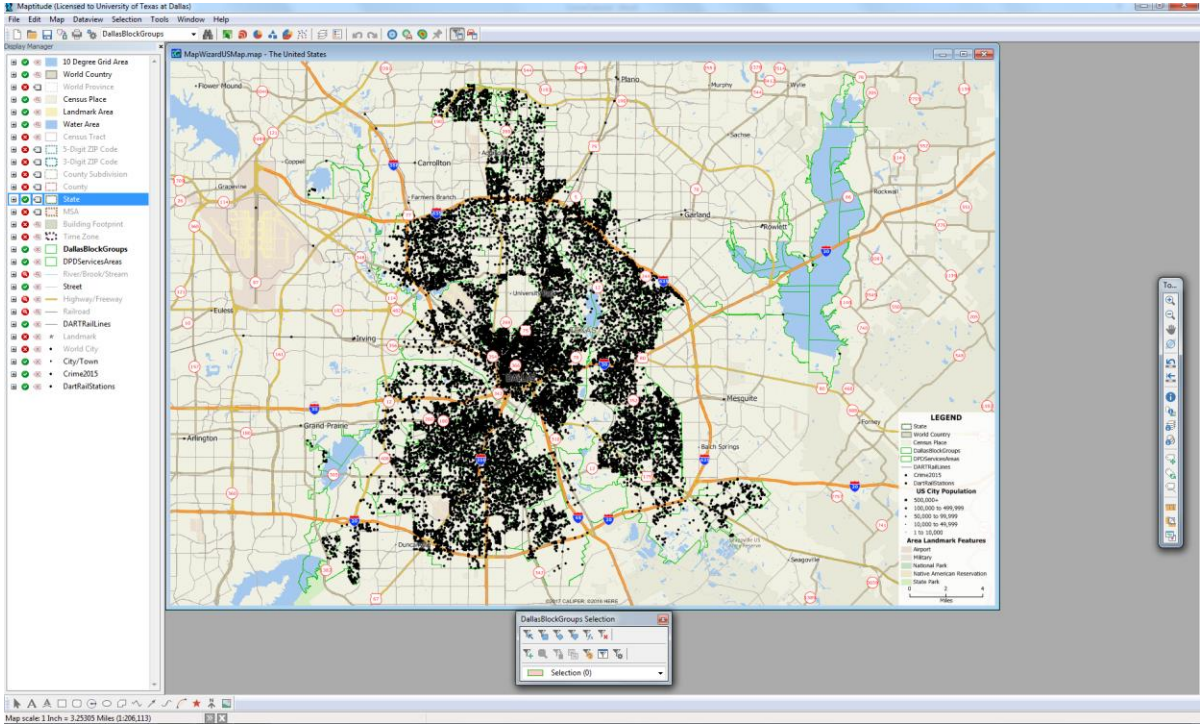
This tutorial uses 2015 Dallas crime and 2015 American Community Survey (ACS) Census data to explore the change in crime rates around DART rail stations at different distances. This will be done by practicing attribute selection, location selection, map overlay, population density calculation, and crime rate calculations.

## 1. Import data

(1) File -> Open -> Navigate to dataset location -> Change the file type to “Geographic File” -> select “BklGrpPop2015”, “Crime2015”, “DartRailLines”, “DartRailStations”, and “DPDServiceAreas” -> ensure that the “Add to map” check box has been checked -> Open

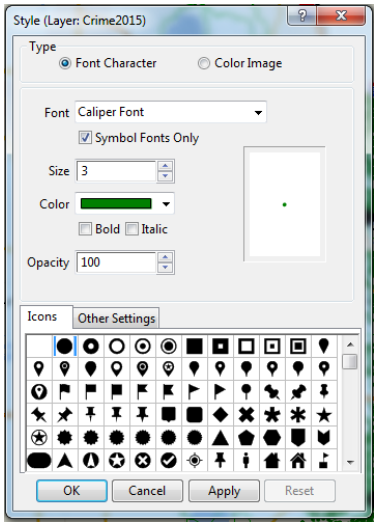


**PRO TIP:** to import multiple data layers at once, select the first desired data layer in the list -> press and hold shift -> select the last desired data layer in the list

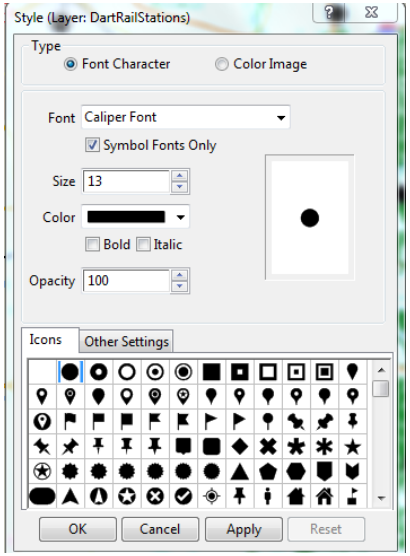


## 2. Change the visualizations

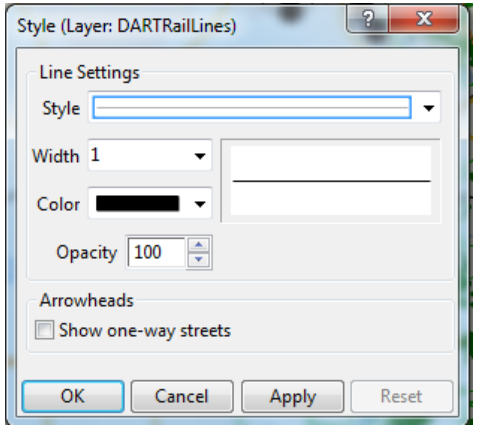
(1) In Display Manager, click the symbol the left of “Crime2015” -> Change the color to green -> OK




(2) In Display Manager, click the symbol the left of “DartRailStations” -> Change the color to black -> Change the size to “13” -> OK

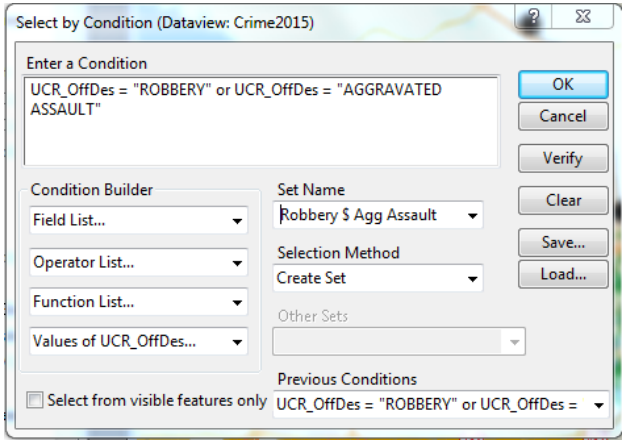


(3) In Display Manager, click the symbol the left of “DartRailLines” -> Change the color to black -> Change the size to “1” -> OK



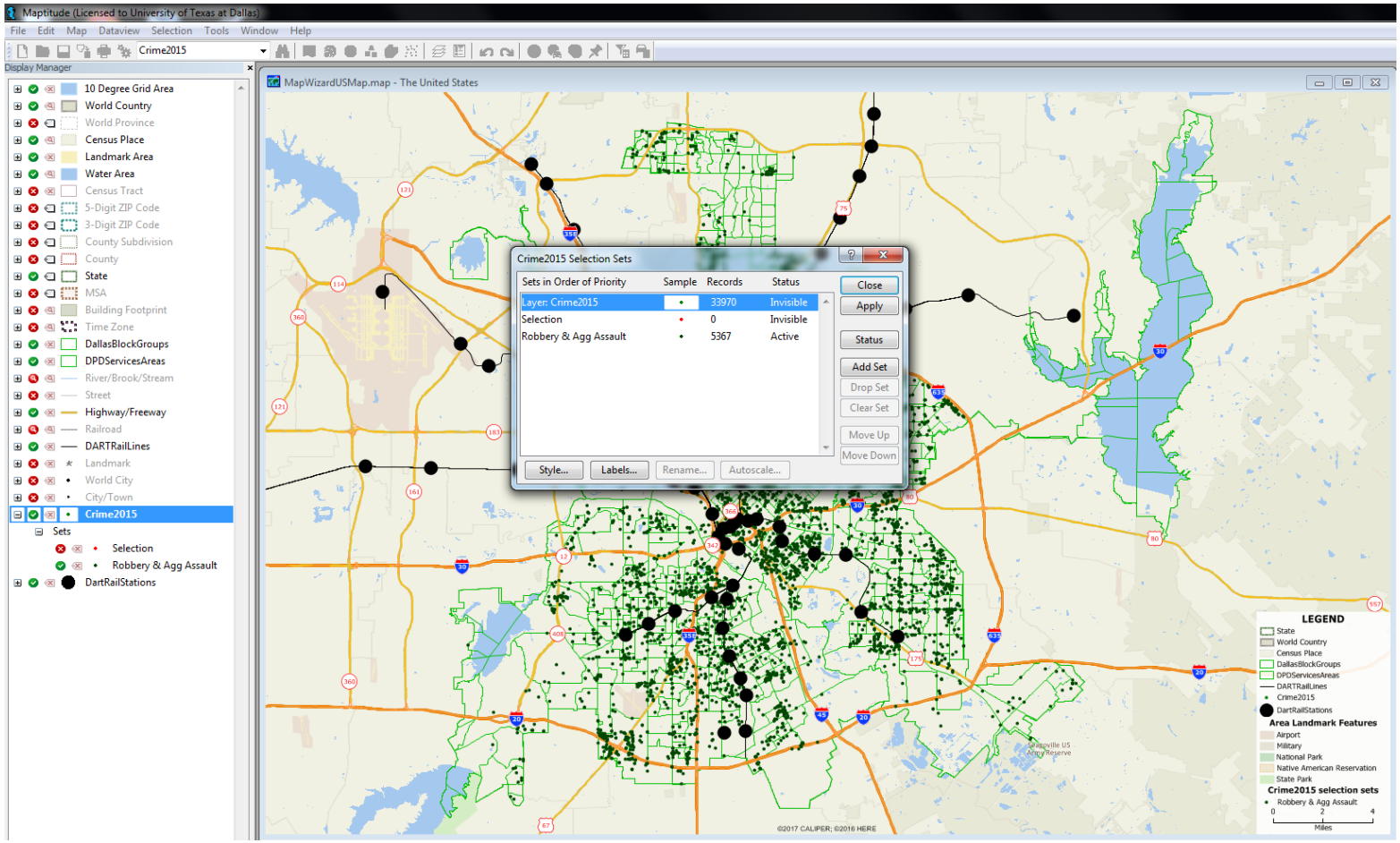

## 2. Select the specific crimes of interest: Robbery and Aggravated Assault

(1) Choose “Crime2015” as the active layer -> Selection -> Select by Conditions



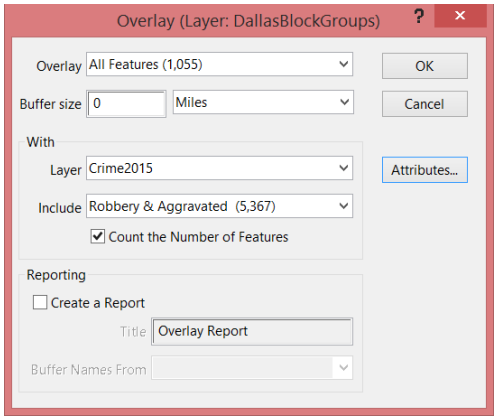

**PRO TIP**: Directly typing the condition into the ‘Enter a Condition’ can be quicker than using ‘Condition Builder’

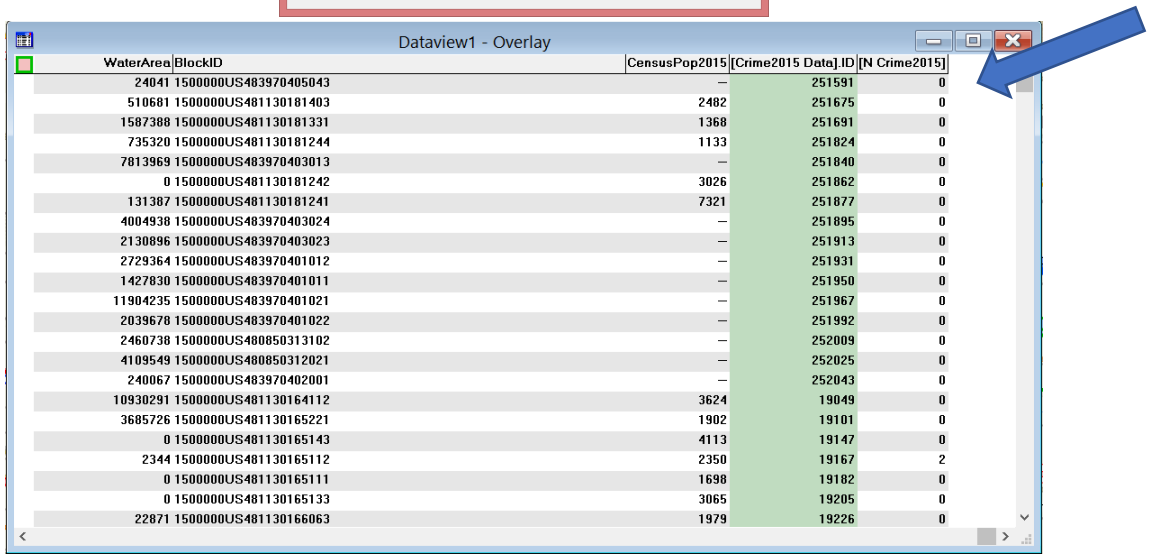
(2) Make sure “Crime2015” is still the working layer -> Selection -> Select “Crime2015” -> Click “Status” and change to “Invisible” –> Click Apply -> Repeat for “Layer: Crime2015”



## 3. Calculate and visualize the crime count per block group

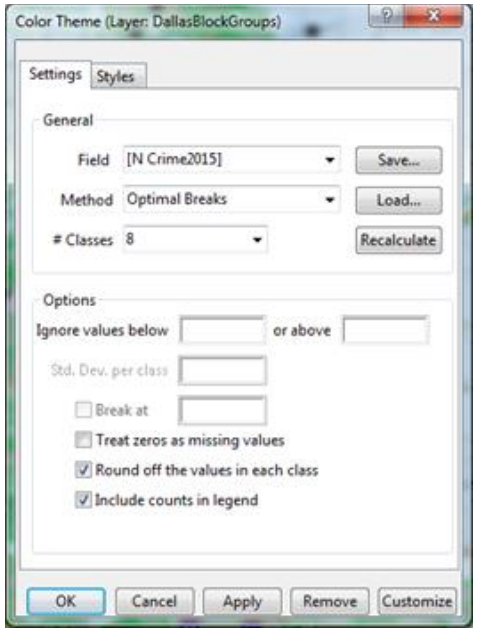
(1) Choose "DallasBlockGroups" as the active layer -> Tools -> Analysis -> Overlay

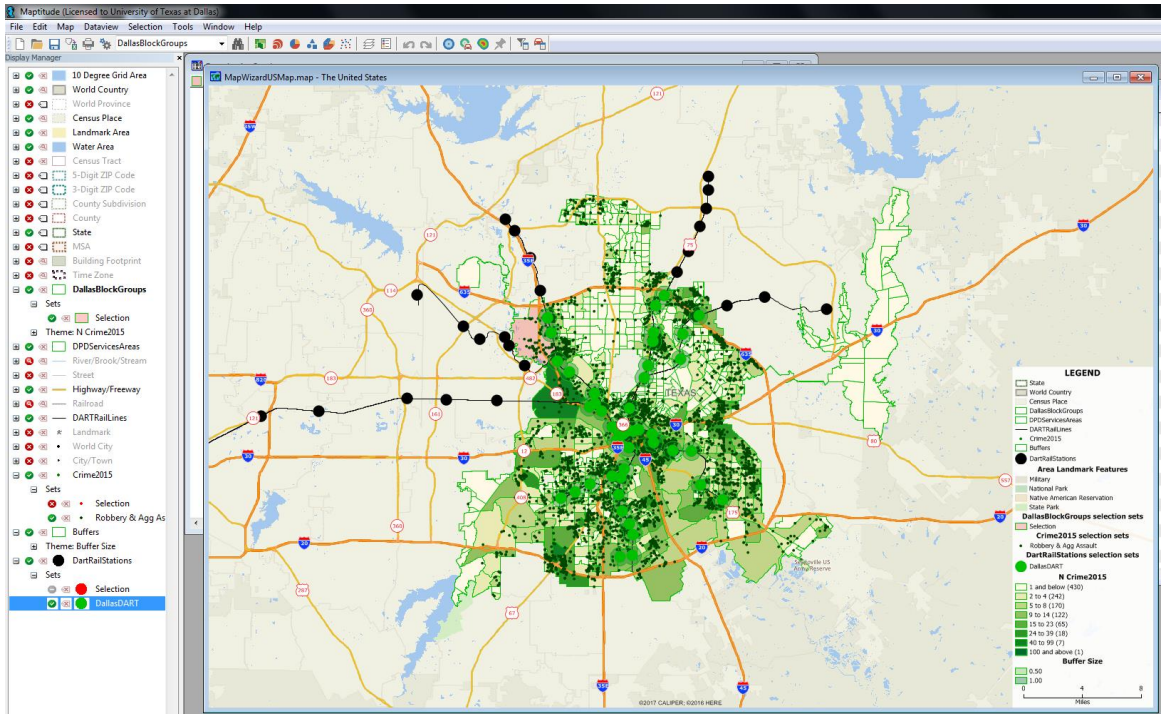



| WaterArea | BlockID | CensusPop2015 | [Crime2015 Data].ID | [N Crime2015] |
|---|---|---|---|---|
| 24041 | 1500000US483970405043 | – | 251591 | 0 |
| 510681 | 1500000US481130181403 | 2482 | 251675 | 0 |
| 1587388 | 1500000US481130181331 | 1368 | 251691 | 0 |
| 735320 | 1500000US481130181244 | 1133 | 251824 | 0 |
| 7813969 | 1500000US483970403013 | – | 251840 | 0 |
| 0 | 1500000US481130181242 | 3026 | 251862 | 0 |
| 131387 | 1500000US481130181241 | 7321 | 251877 | 0 |
| 4004938 | 1500000US483970403024 | – | 251895 | 0 |
| 2130896 | 1500000US483970403023 | – | 251913 | 0 |
| 2729364 | 1500000US483970401012 | – | 251931 | 0 |
| 1427830 | 1500000US483970401011 | – | 251950 | 0 |
| 11904235 | 1500000US483970401021 | – | 251967 | 0 |
| 2039678 | 1500000US483970401022 | – | 251992 | 0 |
| 2460738 | 1500000US480850313102 | – | 252009 | 0 |
| 4109549 | 1500000US480850312021 | – | 252025 | 0 |
| 240067 | 1500000US483970402001 | – | 252043 | 0 |
| 10930291 | 1500000US481130164112 | 3624 | 19049 | 0 |
| 3685726 | 1500000US481130165221 | 1902 | 19101 | 0 |
| 0 | 1500000US481130165143 | 4113 | 19147 | 0 |
| 2344 | 1500000US481130165112 | 2350 | 19167 | 2 |
| 0 | 1500000US481130165111 | 1698 | 19182 | 0 |
| 0 | 1500000US481130165133 | 3065 | 19205 | 0 |
| 22871 | 1500000US481130166063 | 1979 | 19226 | 0 |

(2) Click on the tool bar or map frame -> Thematic map -> Color




Maptitude (Licensed to University of Texas at Dallas)
File Edit Map Dataview Selection Tools Window Help
DallasBlockGroups
Display Manager
10 Degree Grid Area
World Country
World Province
Census Place
Landmark Area
Water Area
Census Tract
5-Digit ZIP Code
3-Digit ZIP Code
County Subdivision
County
State
MSA
Building Footprint
Time Zone
DallasBlockGroups
Sets
Selection
Theme: N Crime2015
DPDServicesAreas
River/Brook/Stream
Street
Highway/Freeway
Railroad
DARTRailLines
Landmark
World City
City/Town
Crime2015
Sets
Selection
Robbery & Agg As
Buffers
Theme: Buffer Size
DartRailStations
Sets
Selection
DallasDART
MapWizardUSMap.map - The United States
TEXAS
LEGEND
State
World Country
Census Place
DallasBlockGroups
DPDServicesAreas
DARTRailLines
Crime2015
Buffers
DartRailStations
Area Landmark Features
Military
National Park
Native American Reservation
State Park
DallasBlockGroups selection sets
Selection
Crime2015 selection sets
Robbery & Agg Assault
DartRailStations selection sets
DallasDART
N Crime2015
1 and below (430)
2 to 4 (242)
5 to 8 (170)
9 to 14 (122)
15 to 23 (65)
24 to 39 (18)
40 to 99 (7)
100 and above (1)
Buffer Size
0.50
1.00
0
4
8
Miles
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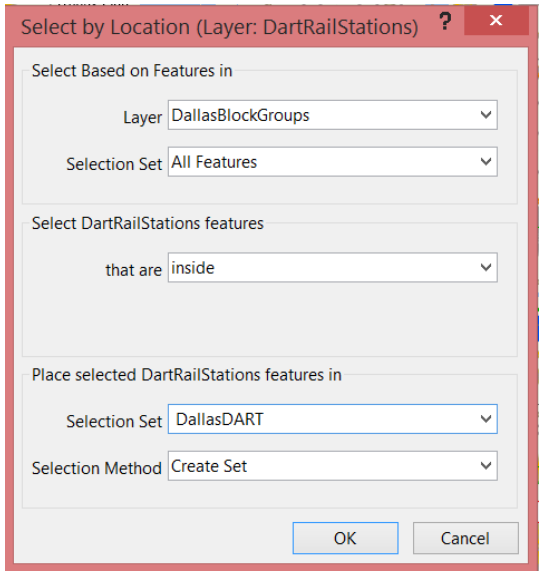
## 4. Select stations by location within Dallas

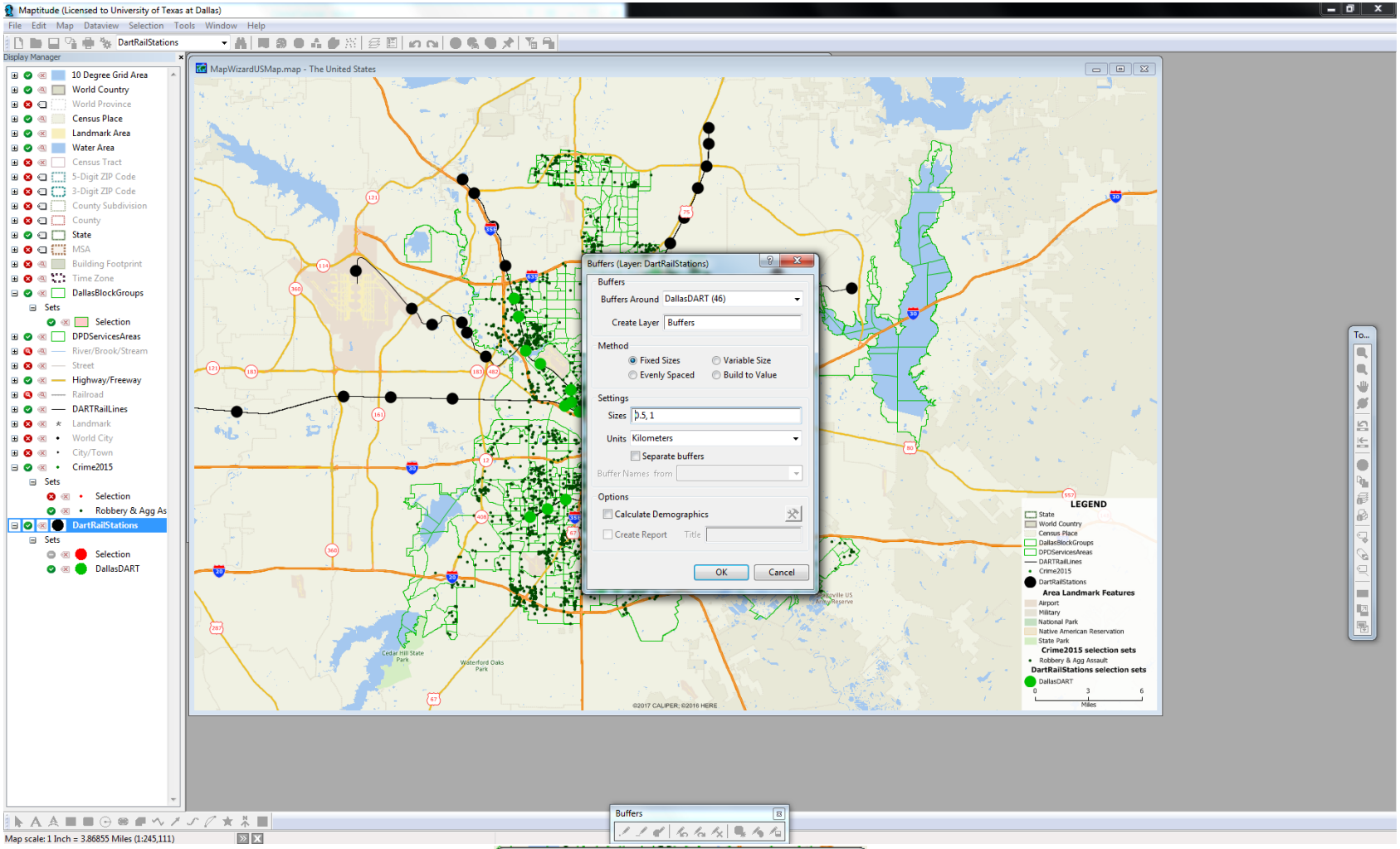
(1) Choose "DARTRailStations" as the working layer -> Selection -> Select by Location




## 5. Generate buffer rings around the Dallas DART stations: 0.5km and 1km

(1) Tools -> Analysis -> Buffers

**PRO TIP**: When creating and saving a new layer, shapefile or data table, give it a short self-explanatory name.

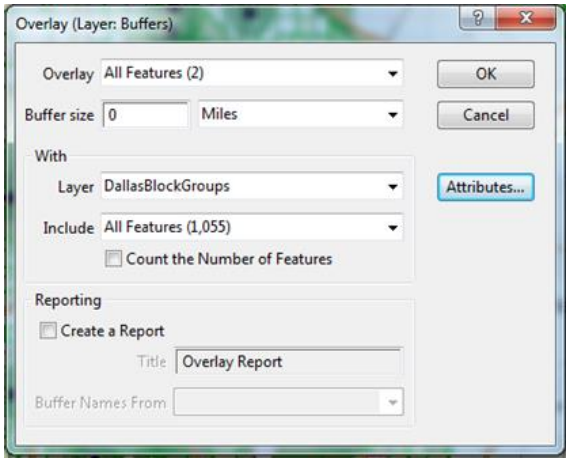



Dataview5 - Buffers

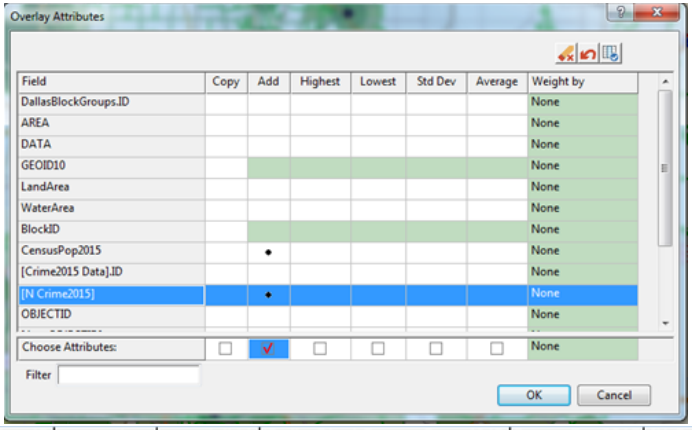
| ID | Area | Width |
|---|---|---|
| 2 | 30.75 | 1.00 |
| 1 | 13.02 | 0.50 |

## 6. Overlay the block group for population and crime count

(1) Choose the newly created "Buffer" layer as the working layer -> Tools -> Analysis -> Overlay



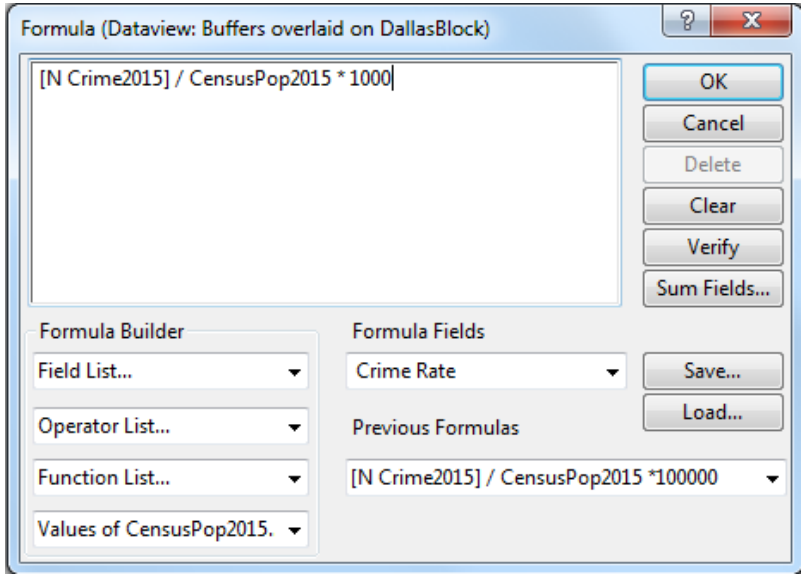

Click "Attributes" -> Click OK -> Give it a self-explanatory name (i.e: Buffer)




| Buffers.ID | Area | Width | [DallasBlockGroups Data:1].ID | CensusPop2015 | [N Crime2015] |
|---|---|---|---|---|---|
| 2 | 30.75 | 1.00 | 2 | 143037.52 | 768.72 |
| 1 | 13.02 | 0.50 | 1 | 57987.24 | 394.53 |

## 7. Calculate the crime rate per buffer ring

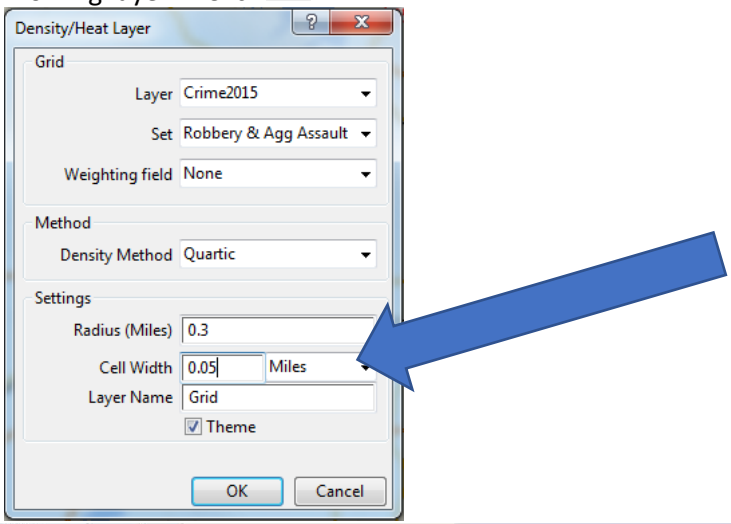
(1) Keep the Dataview for the joined "Buffers" table open -> Click "Formula Fields" ( ) in the main toolbar -> Enter the formula -> OK



## Extra

### Examine high crime density locations through a kernel density analysis

(1) Choose “Crime2015” as the working layer -> Click 




To make the resulting density map more course or fine, adjust the grid size and bandwidth by changing the “Radius (Miles)” and “Cell Width.