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

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

1 File Open									×
Comp	uter 🕨	My Passport (E:) 🕨 G	IS Workshop_Ma	31_18 🕨 CrimeData		- 4 γ	Search CrimeData		٩
Organize 👻 New fo	lder								0
☆ Favorites	^ N	ame		Date modified	Туре	Size			
📃 Desktop		BlkGrpPop2015		3/30/2018 1:34 PM	Caliper Compact .	247 KB			
🚺 Downloads		Crime2015		3/30/2018 1:34 PM	Caliper Compact .	403 KB	1		
📃 Recent Places		DartRailLines		3/30/2018 1:34 PM	Caliper Compact .	86 KB	1		
		DartRailStations		3/30/2018 1:34 PM	Caliper Compact .	6 KB			
🥽 Libraries		DPDServiceAreas		3/30/2018 1:34 PM	Caliper Compact .	54 KB			
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				access					
File	e name:	"DPDServiceAreas" "E	lkGrpPop2015" "	Crime2015" "DartRailLines"	"DartRailStations"	Options	Geographic File (*.cc	f;*.dbd) Cance	•

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

Style (Layer: Crime2015)	? ×
Type	e
Font Caliper Font	
Size 3	
Color Bold Italic	•
Opacity 100	
Icons Other Settings	
] 🔳 🕈 🔺
	• • •
	* * *
	ŬÛ
OK Cancel Apply	Reset

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



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Style (Layer: DARTRailLines)	? ×
Line Settings Style	
Width 1	
Color	
Opacity 100 🛓	
Arrowheads	
Show one-way streets	
OK Cancel Apply	Reset

(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

Select by Condition (Dataview: Crime	2015)	3 22			
Enter a Condition					
UCR_OffDes = "ROBBERY" or UCR_OffDes = "AGGRAVATED ASSAULT"					
		Verify			
Condition Builder	Set Name Robbery \$ Agg Assault	Clear			
Operator List	Selection Method	Save			
	Create Set 👻	Load			
Function List 👻	Other Sets				
Values of UCR_OffDes		-			
	Previous Conditions				
Select from visible features only	UCR_OffDes = "ROBBERY" or UCF	CoffDes = ' ▼			

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. <u>Calculate and visualize the crime count per block group</u>
- (1) Choose "DallasBlockGroups" as the active layer -> Tools -> Analysis -> Overlay

Overlay (Layer: DallasBlockGroups)	
Overlay All Features (1,055) V OK	
Buffer size 0 Miles V Cancel	
- With	
Layer Crime2015 Y Attributes	
Include Robberv & Appravated (5367)	
Count the Number of Features	
Reporting	
Title Overlay Report	
Buffer Names From	
Dataview1 - Overlay	
WaterArea BlockID CensusPop2015 [Crime2015 Data].ID [N Crime2015	
24041 150000005483870405043 - 251591	
31001 13000005401 130101403 2402 231073	0
735390 150000005401 13131 244 133 251824	0
7813969 1500000U5483970403013 – 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 150000US483970401011 – 251950	0
11904235 1500000US483970401021 – 251967	0
2039678 1500000US483970401022 – 251992	0
2460738 1500000US480850313102 – 252009	0
4109549 1500000US480850312021 – 252025	0
240067 1500000US483970402001 – 252043	0
10330291 1500000US481130164112 3624 19049	0
3685726 1500000US481130165221 1902 19101	U
u 150000005481130165143 4113 19147	0
2344 1500000 15481130165112 2350 10167	2
	0
0 15000000546113015111 1698 19182 1 0 0 15000000546113015111 1698 19182 10051	0
2311 1300000000 13010712 2330 13107 0 1500000000 1611 1698 19182 1 0 150000000000 1611301 1651 3065 19205 28871 16000000000000000000000000000000000000	

(2) Click and on the tool bar or map frame -> Thematic map -> Co	p frame -> Thematic map -> Color	2) Click 획 on the tool bar
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Settings Styl	es			
General				
Field	[N Crime2015]		•	Save
Method	Optimal Breaks		•	Load
# Classes	8	•		Recalculate
Options				
Ignore value	s below	or ab	ove	
Std. Dev. p	er class			
Bre	sk at			
Tre:	at zeros as missing	values		
Rou Rou	ind off the values i	n each clas	55	
V Incl	ude counts in lege	nd		



4. Select stations by location within Dallas

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

Select by Location (Layer: DartRailStations) ?	x
Select Based on Features in	
Layer DallasBlockGroups	~
Selection Set All Features	~
Select DartRailStations features	
that are inside	~
Place selected DartRailStations features in	
Selection Set DallasDART	~
Selection Method Create Set	~
OK	el

- 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.



6. Overlay the block group for population and crime count

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

Overlay	All Feature	es (2)	•	ОК
uffer size	0	Miles	•	Cancel
With				
Layer	DallasBloc	kGroups	-	Attributes
Include	All Feature	es (1,055)	•	
	Count	the Number of Features		
Reporting	9			
Creat	e a Report			
	Title	Overlay Report		
Buffer Na	mes From			

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

Field	Conv	Add	Highest	Lowest	Std Dev	Average	Weight by	
DallasBlockGroups.ID	copy	Hou	ringinese	conca	Statet	Arcityc	None	- 6
AREA							None	
DATA							None	
GEOID10							None	
LandArea	-						None	- 1
WaterArea							None	
BlockID							None	
CensusPop2015		•					None	
[Crime2015 Data].ID							None	
[N Crime2015]		•					None	
OBJECTID							None	
Choose Attributes:							None	
Filter							OK Cana	-
							Cance	-
	A.C.A	ыlго -	JI as Plac	k Groun	n Data	1110	oneusPon 201	

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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

ormula (Dataview: Buffers overlaid on DallasBlock)							
[N Crime2015] / CensusPop2015	* 1000	ОК					
		Cancel					
	Delete						
		Clear					
		Verify					
		Sum Fields					
Formula Builder	Formula Fields						
Field List 👻	Crime Rate 🔹	Save					
Operator List 👻	Previous Formulas	Load					
Function List 👻	[N Crime2015] / CensusPop201	5 *100000 👻					
Values of CensusPop2015. 🗸							

Extra

Examine high crime density locations through a kernel density analysis



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