



Geographic Information System

Spatial Interpolation Lab Practice

Dr. Chan, Chun-Hsiang
Department of Geography
National Taiwan Normal University



Outline

- Objectives
- Set PCS and Feature Dataset
- XY Table To Point
- Set Symbology for Airbnb Listings
- IDW
- Kriging
- Nearest Neighbor
- Spline
- Create 250m/1500m/2500m Fishnet
- Spatial Join for Counting Number of Airbnb Listings
- Symbology – Grid 250m/1500m/2500m
- MAUP Observation

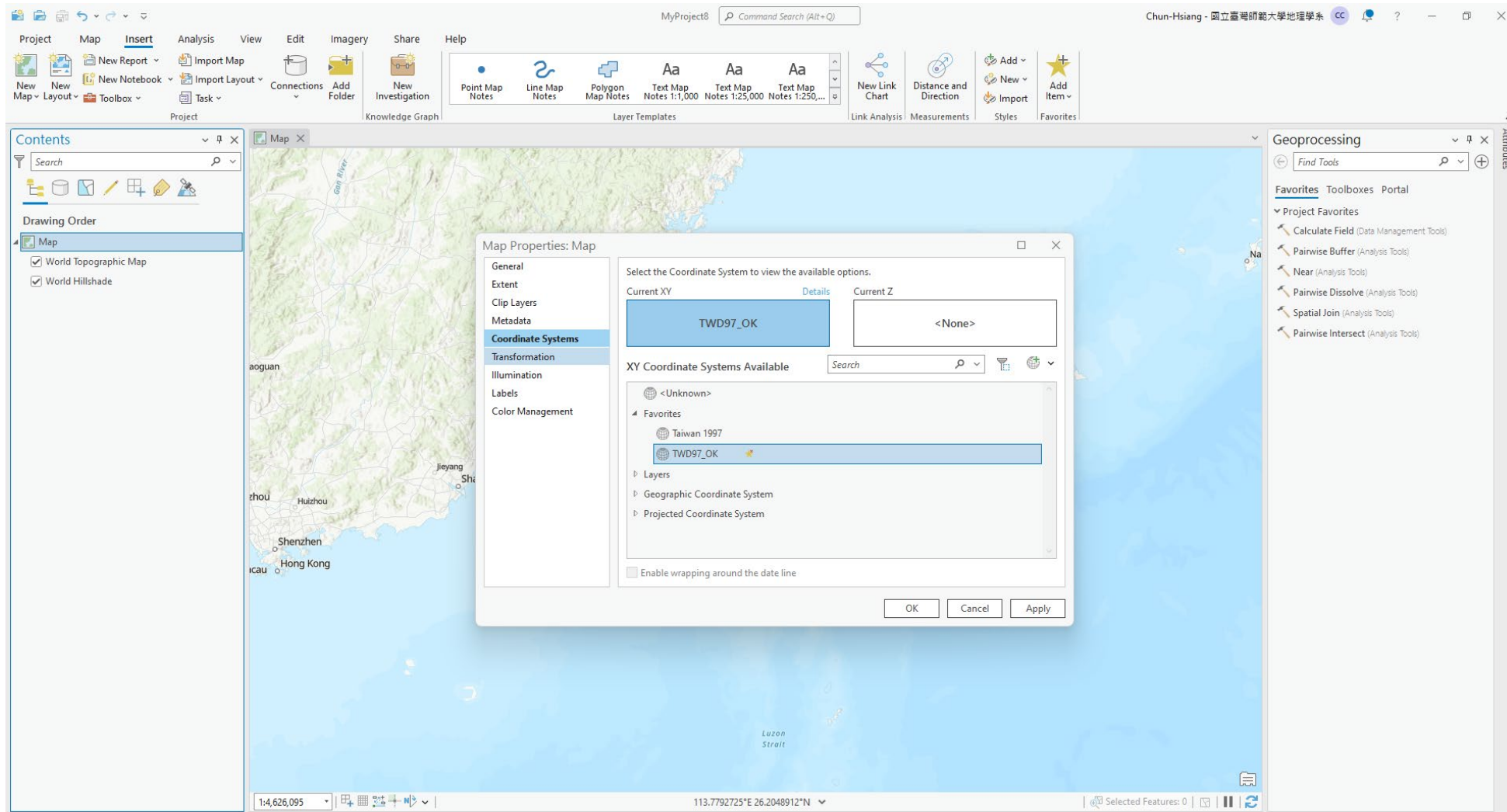


Objectives

- Use four different spatial interpolation method to understand the spatial distribution of Airbnb listing price.
- Use create fishnet to generate 250m, 1500m, and 2500m of grid to observe the MAUP effect by the number of Airbnb listing.



Set PCS and Feature Dataset



Add Airbnb Listing Data

The screenshot displays the QGIS interface with a map of Taiwan and a data table for Airbnb listings. The map shows major cities like Taipei, Taichung, and Tainan. The data table below the map contains the following information:

id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	price	minimum_nights	number_of_reviews	last_review	reviews
1	68398 Tonghua Studio C nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	11	2024/5/19	
2	271733 Taipei Rooftop - Whol...	242033	Robyn And David	<Null>	文山區	25.00581	121.55518	Entire home/apt	1350	7	69	2024/4/5	
3	289296 Fabulous studio - Cen...	1338052	Herman	<Null>	大安區	25.04287	121.55112	Entire home/apt	2799	28	29	2024/4/23	
4	289298 Fabulous Studio in he...	1338052	Herman	<Null>	中山區	25.08091	121.55902	Entire home/apt	2344	30	187	2022/1/12	
5	333362 3min walk to MRT, Qui...	1698423	Jojo	<Null>	中山區	25.07893	121.55061	Entire home/apt	1888	4	93	2024/6/15	
6	646629 [Re-Open Special] Sky...	3204303	Kate	<Null>	大安區	25.017081	121.532327	Entire home/apt	2627	2	244	2020/3/9	
7	697760 Tonghua Studio D nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	4	2021/2/5	
8	718493 離樓區 無日租 暖氣...	3705836	Gordon	<Null>	內湖區	25.0692	121.58582	Entire home/apt	2679	14	91	2024/5/27	
9	761561 Studio with kitchen n...	4014285	Pei	<Null>	中正區	25.02463	121.52318	Entire home/apt	2279	5	36	2024/6/25	
10	837546 海邊TPEshort rent ,X...	4377110	Alice	<Null>	內湖區	25.08353	121.56432	Private room	2009	8	3	2018/1/1	
11	837558 HIPOPO TPE short rent...	4377110	Alice	<Null>	內湖區	25.08353	121.56499	Private room	1907	7	9	2022/8/24	
12	855470 HIPOPO TPE short rent...	4377110	Alice	<Null>	內湖區	25.08374	121.56374	Private room	1907	30	1	2019/4/14	
13	858235 海邊豪華租G房	4377110	Alice	<Null>	內湖區	25.08347	121.56491	Private room	1730	7	13	2024/1/4	

XY Table To Point for Airbnb Listing Data

The screenshot shows the QGIS interface with the 'XY Table To Point' tool selected in the 'Create Points From Table' submenu. The map displays a geographical view of Taiwan with various cities labeled. The 'Contents' panel on the left shows the 'listings_csv' layer selected. The 'Catalog' panel on the right shows the project structure. At the bottom, a data table is displayed with the following columns and rows:

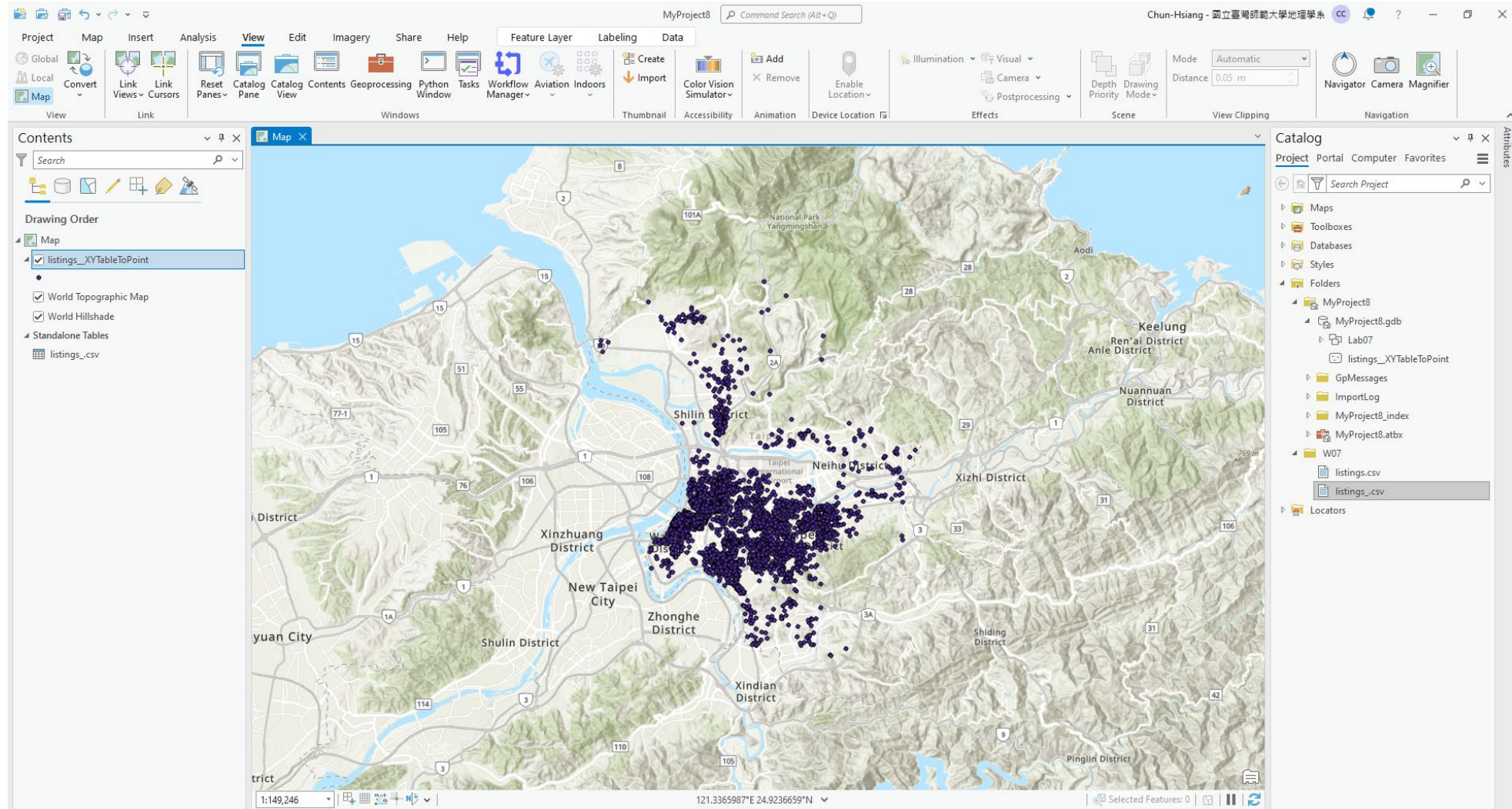
		host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	price	minimum_nights	number_of_reviews	last_review	reviews
	ua Studio C nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	11	2024/5/19	
	Rooftop - Who...	242033	Robyn And David	<Null>	文山區	25.00581	121.55518	Entire home/apt	1350	7	69	2024/4/5	
	ous studio - Cen...	1338052	Herman	<Null>	大安區	25.04287	121.55112	Entire home/apt	2799	28	29	2024/4/23	
	ous Studio in he...	1338052	Herman	<Null>	中山區	25.08091	121.55902	Entire home/apt	2344	30	187	2022/1/12	
	walk to MRT, Qui...	1698423	Jojo	<Null>	中山區	25.07893	121.55061	Entire home/apt	1888	4	93	2024/6/15	
6	646629 [Re-Open Special] Sky...	3204303	Kate	<Null>	大安區	25.017081	121.532327	Entire home/apt	2627	2	244	2020/3/9	
7	697760 Tonghua Studio D nea...	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	4	2021/2/5	

XY Table To Point for Airbnb Listing Data

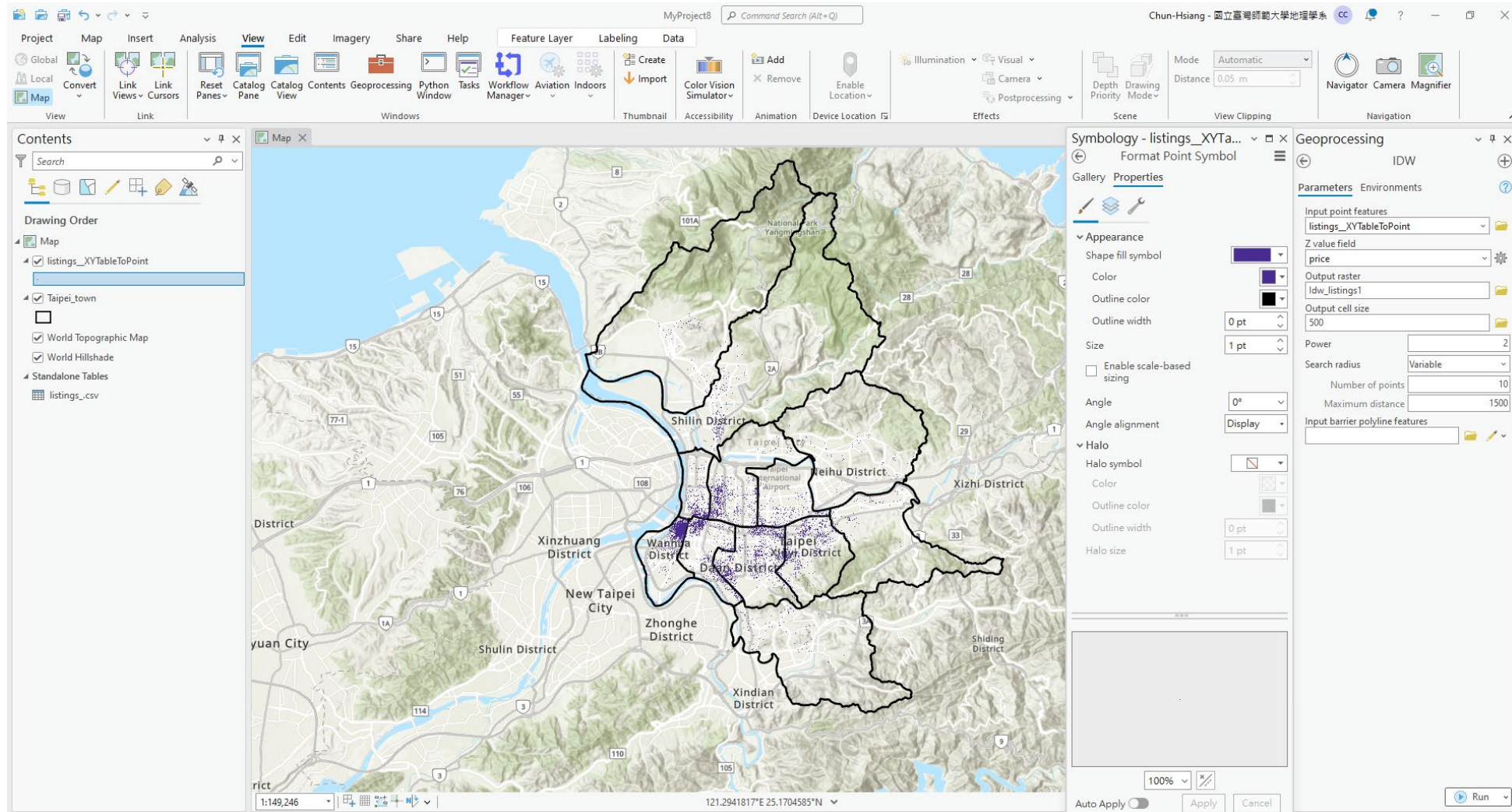
The screenshot displays the ArcGIS Pro interface. The 'Contents' pane on the left shows a context menu for the 'listings_csv' layer, with 'XY Table To Point' selected. The map shows a geographical view of Taiwan with city labels like Taipei, Taichung, and Tainan. The 'Catalog' pane on the right shows the project structure, including the 'listings_csv' and 'listings_csv.csv' files. The data table at the bottom shows the following columns and rows:

	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	price	minimum_nights	number_of_reviews	last_review	reviews
1	339014	Lisa	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	11	2024/5/19	
2	242033	Robyn And David	<Null>	文山區	25.00581	121.55518	Entire home/apt	1350	7	69	2024/4/5	
3	1338052	Herman	<Null>	大安區	25.04287	121.55112	Entire home/apt	2799	28	29	2024/4/23	
4	1338052	Herman	<Null>	中山區	25.08091	121.55902	Entire home/apt	2344	30	187	2022/1/12	
5	1698423	Jojo	<Null>	中山區	25.07893	121.55061	Entire home/apt	1888	4	93	2024/6/15	
6	646629	[Re-Open Special] Sky...	<Null>	大安區	25.017081	121.532327	Entire home/apt	2627	2	244	2020/3/9	
7	697760	Tonghua Studio D nea...	<Null>	大安區	25.028775	121.554686	Entire home/apt	1107	30	4	2021/2/5	

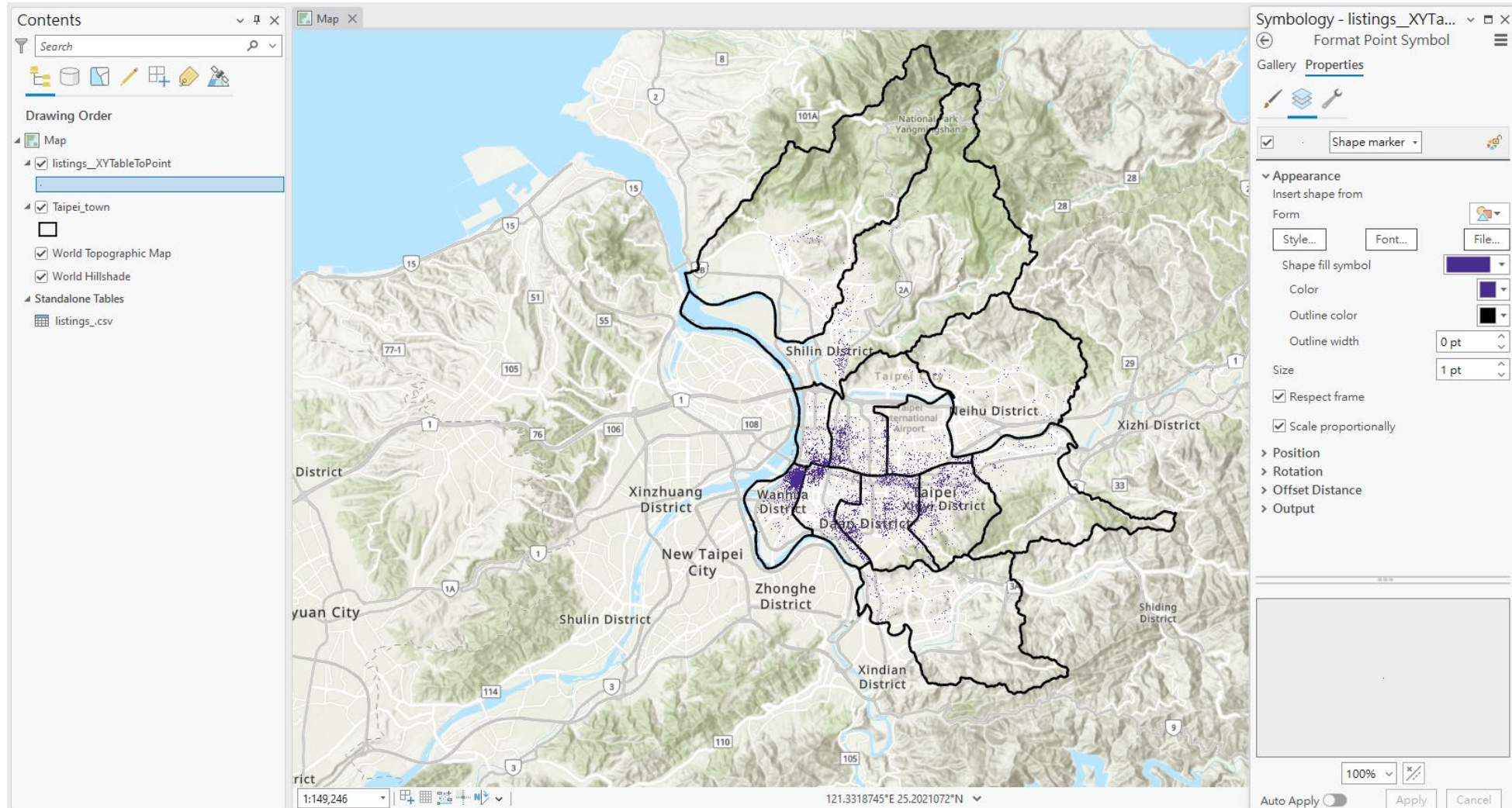
XY Table To Point for Airbnb Listing Data



Set Symbology for Airbnb Listings



Set Symbology for Airbnb Listings



IDW

The screenshot displays the ArcGIS Pro interface with the IDW (Inverse Distance Weighted) tool configured in the Geoprocessing pane. The main map shows a topographic view of the Taipei area with district boundaries and a point cloud of listings. The Geoprocessing pane on the right is set to 'IDW' and includes the following parameters:

- Input point features:** listings_XYTableToPoint
- Z value field:** price
- Output raster:** Idw_listings1
- Output cell size:** 500
- Power:** 2
- Search radius:** Variable
- Number of points:** 10
- Maximum distance:** 1500
- Input barrier polyline features:** (empty)

The Contents pane on the left shows the following layers in the drawing order:

- listings_XYTableToPoint
- Taipei_town
- World Topographic Map
- World Hillshade
- Standalone Tables
- listings_csv

The status bar at the bottom indicates a scale of 1:149,246 and coordinates of 121.3040893°E 25.2164269°N.

IDW

The screenshot displays the ArcGIS Desktop interface for a project named "MyProject8". The main map area shows a topographic map of Taipei, Taiwan, with district boundaries and a point cloud of data points. The Geoprocessing pane on the right is open, showing the IDW tool parameters. The tool is configured with the following settings:

- Parameters: IDW
- Output Coordinates: Output Coordinate System is TWD97_OK, Geographic Transformations is set to the default.
- Processing Extent: Extent is set to the current map extent.
- Raster Analysis: Cell Size is Maximum of Inputs, Cell Size Projection Method is Convert units, Mask is Taipei_town, and Snap Raster is set to the default.
- Geodatabase: Output CONFIG Keyword is empty, Auto Commit is 1000.
- Raster Storage: Tile Size is Width 128 and Height 128.

The Run button is visible at the bottom right of the Geoprocessing pane.

IDW

The screenshot shows the ArcGIS Pro interface with the IDW (Inverse Distance Weighted) tool applied to a dataset. The main map area displays a topographic map of Taipei, Taiwan, with a color-coded interpolation surface overlaid. The surface uses a color scale from green (low values) to red (high values). The legend on the left, titled 'Drawing Order', shows the 'Idw_listings1' layer with a 'VALUE' legend. The legend categories are:

- 280,001 - 1,099,776
- 1,099,777 - 1,448,596
- 1,448,597 - 2,268,371
- 2,268,372 - 4,194,959
- 4,194,96 - 8,722,71
- 8,722,711 - 19,363,56
- 19,363,561 - 44,371,046
- 44,371,047 - 103,142,143
- 103,142,144 - 241,262,453

The Geoprocessing tool window on the right shows the 'IDW' tool parameters. The 'Output Coordinates' section is set to 'TWD97_OK'. The 'Processing Extent' section shows the 'Extent' and 'Extent Coordinate System'. The 'Raster Analysis' section shows 'Cell Size' set to 'Maximum of Inputs', 'Cell Size Projection Method' set to 'Convert units', and 'Mask' set to 'Taipei_town'. The 'Geodatabase' section shows 'Output CONFIG Keyword' and 'Auto Commit' set to '1000'. The 'Raster Storage' section shows 'Tile Size' with 'Width' and 'Height' both set to '128'. A 'Run' button is visible at the bottom of the tool window. A status bar at the bottom of the map shows the coordinates '121.3197582°E 25.2138984°N' and a scale of '1:149,246'.

Kriging

The screenshot displays the ArcGIS Pro interface for performing a Kriging analysis. The main map shows a topographic view of Taipei, Taiwan, with district boundaries and a list of points. The Geoprocessing pane on the right shows the 'Kriging' tool parameters.

Geoprocessing Parameters:

- Tool: Kriging
- Input point features: listings_XYTableToPoint
- Z value field: price
- Output surface raster: Kriging_list1
- Semivariogram properties:
 - Kriging method: Ordinary
 - Semi-variogram model: Spherical
 - Lag size: [empty]
 - Major range: [empty]
 - Partial sill: [empty]
 - Nugget: [empty]
- Output cell size: 500
- Search radius: Variable
- Number of points: 10
- Maximum distance: 1500
- Output variance of prediction raster: [empty]

Contents Panel (Drawing Order):

- Map
- listings_XYTableToPoint
- Taipei_town
- Idw_listings1
 - VALUE
 - 280,001 - 1,099,776
 - 1,099,777 - 1,448,596
 - 1,448,597 - 2,268,371
 - 2,268,372 - 4,194,959
 - 4,194,96 - 8,722,71
 - 8,722,711 - 19,363,56
 - 19,363,561 - 44,371,046
 - 44,371,047 - 103,142,143
 - 103,142,144 - 241,262,453
- World Topographic Map
- World Hillshade
- Standalone Tables
 - listings_csv

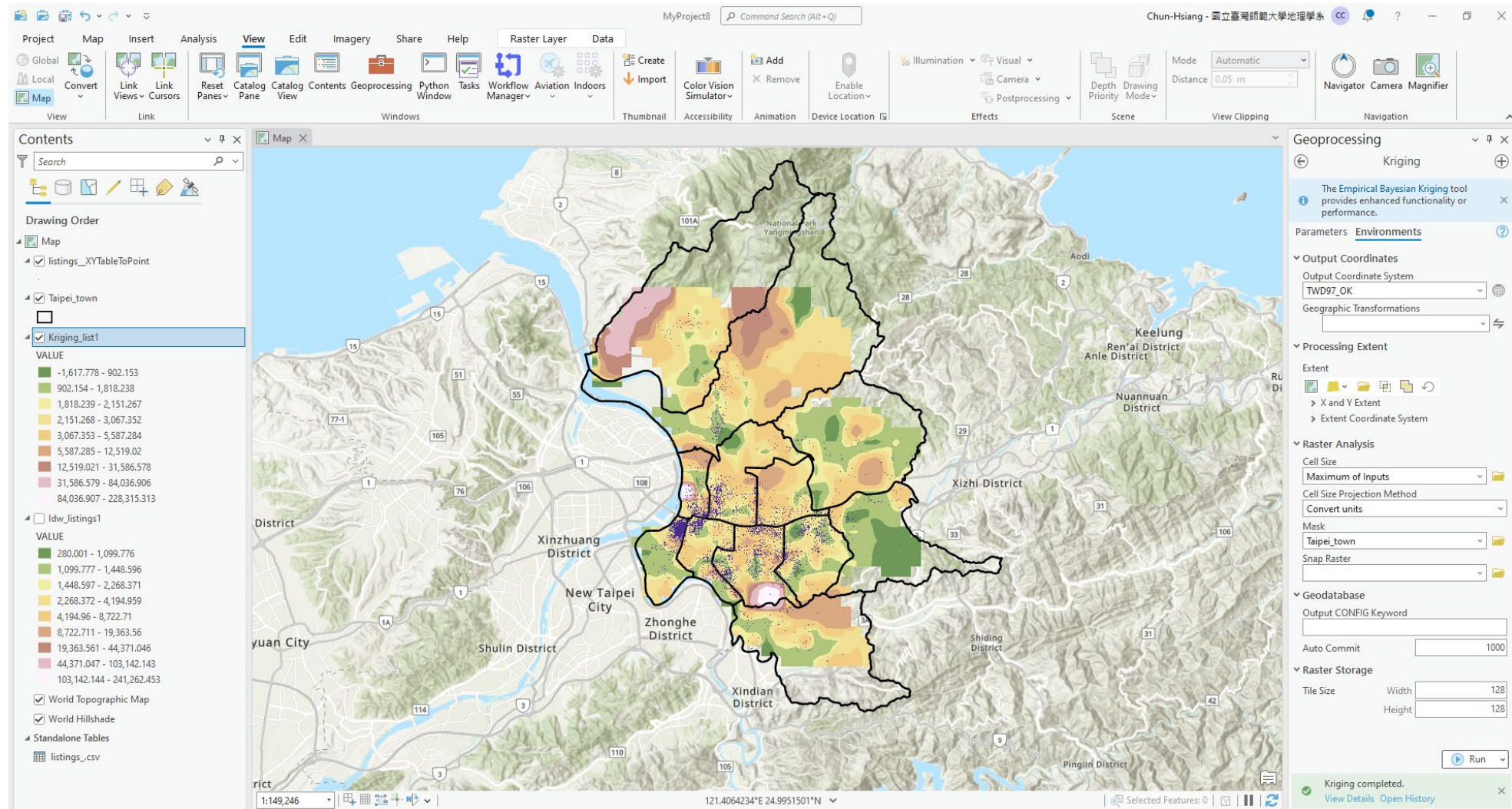
Kriging

The screenshot displays the ArcGIS Pro interface for a Kriging analysis. The main map shows a terrain with various districts outlined in black, including Shilin District, Keelung, Ren'ai District, Nuannuan District, Xizhi District, Heihu District, Taipei, Xindian District, Xinzhuang District, New Taipei City, Zhonghe District, Shulin District, and Pinglin District. The Geoprocessing pane on the right shows the Kriging tool settings:

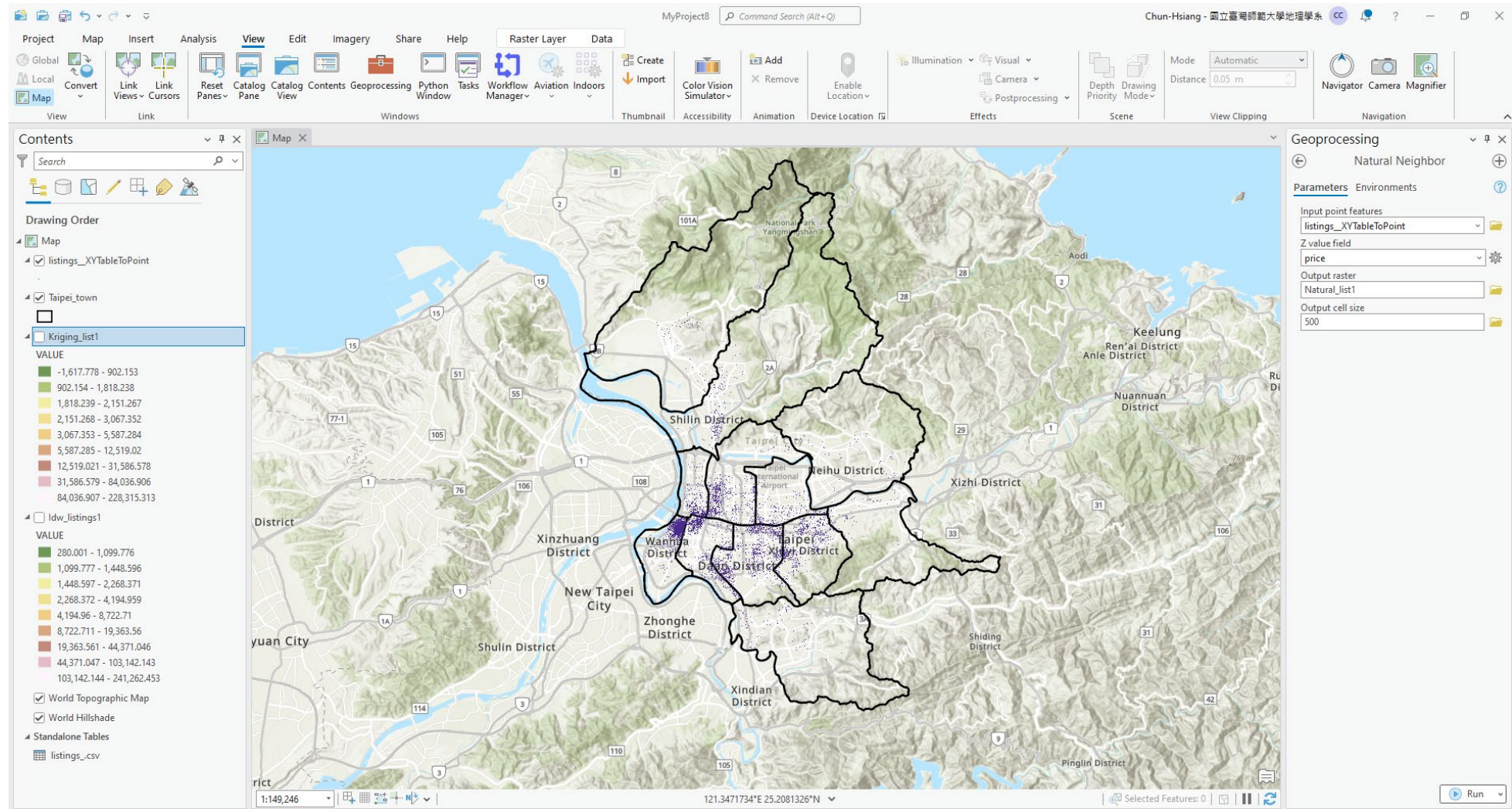
- Output Coordinates:** Output Coordinate System: TWD97_OK
- Processing Extent:** Extent: X and Y Extent, Extent Coordinate System
- Raster Analysis:** Cell Size: Maximum of Inputs, Cell Size Projection Method: Convert units
- Geodatabase:** Output CONFIG Keyword: [empty], Auto Commit: 1000
- Raster Storage:** Tile Size: Width: 128, Height: 128

The Contents pane on the left shows the map layers, including 'listings_XYTableToPoint', 'Taipei_town', and 'ldw_listings1'. The 'ldw_listings1' layer is selected, and its legend shows a color scale for values ranging from 280,001 to 241,262,453.

Kriging



Nearest Neighbor



Nearest Neighbor

The screenshot displays the ArcGIS Pro interface with the following components:

- Top Menu Bar:** Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help. Sub-menus include Raster Layer and Data.
- Toolbars:** Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help, Raster Layer, Data, Windows, Thumbnail, Accessibility, Animation, Device Location, Effects, Scene, View Clipping, Navigation.
- Contents Panel (Left):** Shows a list of layers including 'listings_XYTableToPoint', 'Taipei_town', 'Kriging_list1', and 'ldw_listings1'. A legend for 'Kriging_list1' is visible, showing value ranges and corresponding colors.
- Map View (Center):** A topographic map of Taipei, Taiwan, showing district boundaries (Shilin, Xinyuan, Xindian, etc.) and a set of points representing the 'Nearest Neighbor' analysis results.
- Geoprocessing Pane (Right):** Shows the 'Natural Neighbor' tool configuration. Parameters include:
 - Output Coordinates:** Output Coordinate System: TWD97_OK.
 - Processing Extent:** Extent of data in all layers.
 - Geodatabase:** Output CONFIG Keyword: 1000.
 - Raster Storage:** Tile Size: Width 128, Height 128.

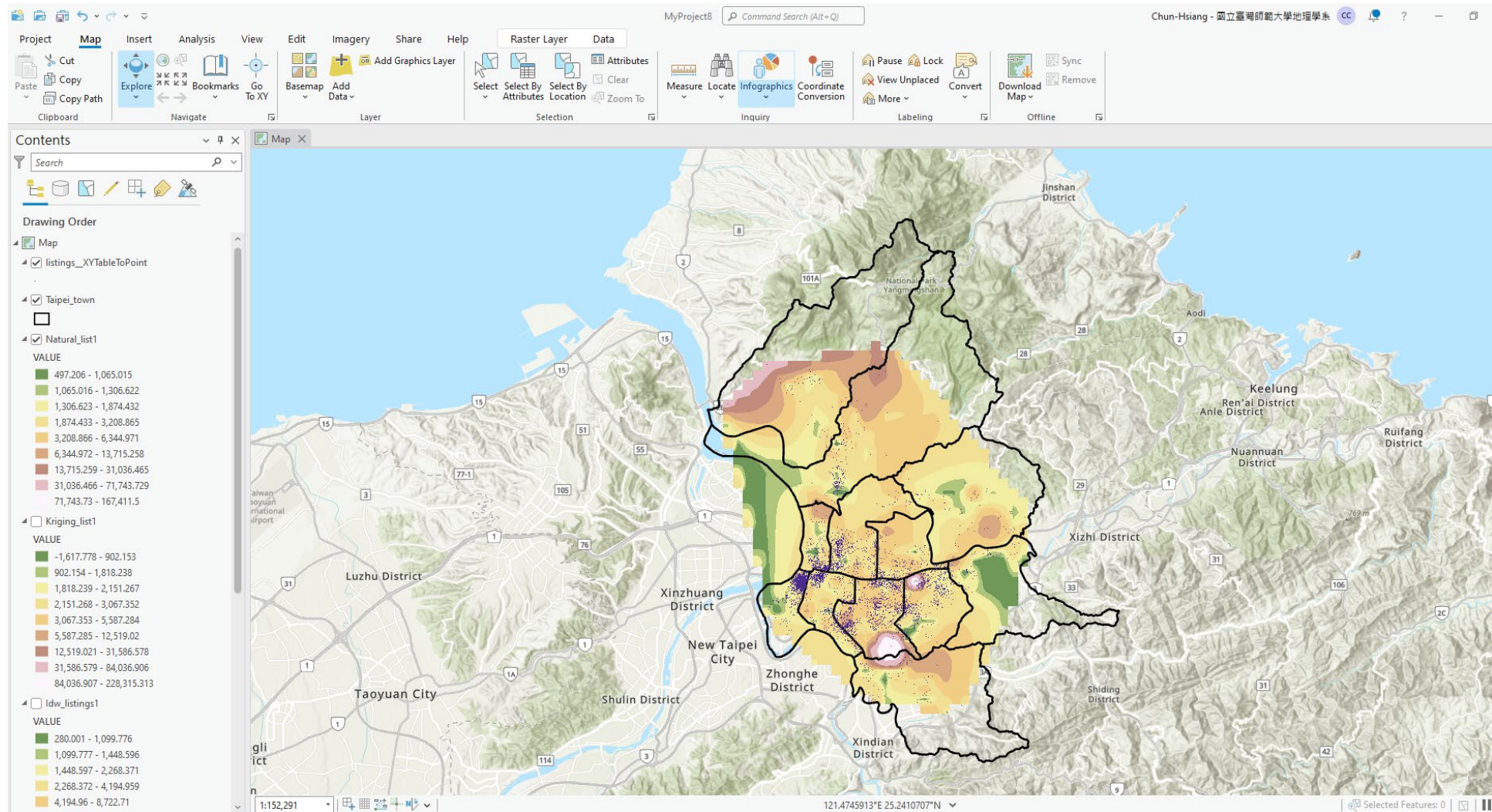
Nearest Neighbor

The screenshot shows the ArcGIS Pro interface with the 'Natural Neighbor' tool active in the Geoprocessing pane. The tool parameters are as follows:

- Tool Name:** Natural Neighbor
- Parameters:** Environments
- Output Coordinates:** Output Coordinate System: TWD97_OK
- Processing Extent:** Extent: Extent of Input Data
- Raster Analysis:** Cell Size: Maximum of Inputs
- Geodatabase:** Output CONFIG Keyword: (empty)
- Raster Storage:** Tile Size: Width 128, Height 128

The map shows a terrain with district boundaries and a list of points. The tool is used to find the nearest neighbor for each point based on the terrain's elevation.

Nearest Neighbor



Spline

The screenshot displays the ArcGIS Pro interface with the Spline tool active in the Geoprocessing pane. The main map shows a city area with district boundaries and a spline overlay. The Geoprocessing pane on the right shows the tool's parameters:

- Parameters:** Spline
- Input point features:** listings_XYTableToPoint
- Z value field:** price
- Output raster:** Spline_list1
- Output cell size:** 500
- Spline type:** Regularized
- Weight:** 0.1
- Number of points:** 10

The map shows a city area with district boundaries and a spline overlay. The spline is a smooth line that follows the general shape of the city's boundary. The Geoprocessing pane also shows a status message: "Spline completed. View Details Open History".

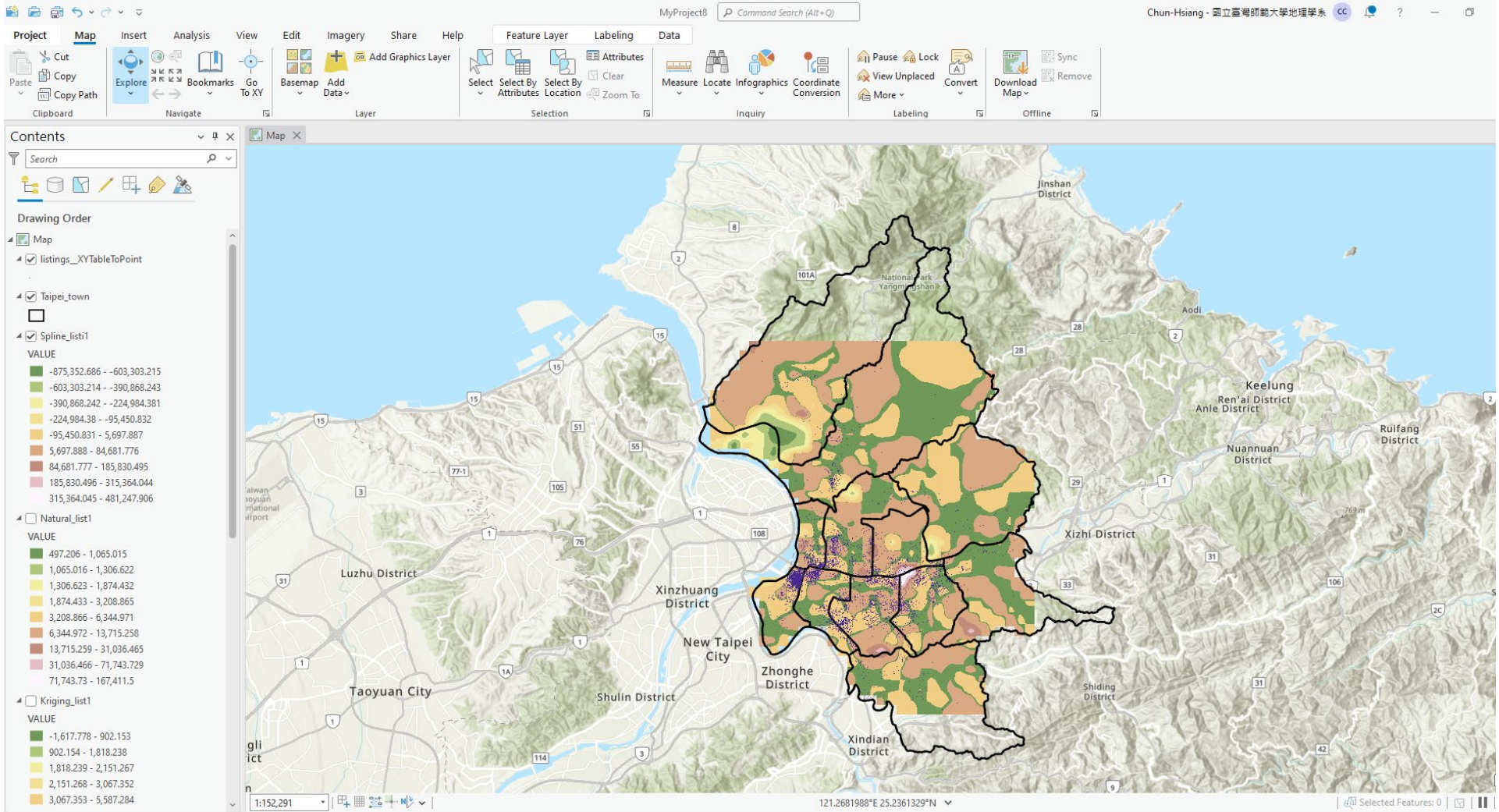
Spline

The screenshot displays the Spline software interface. The main window shows a map of Taipei with a spline boundary overlaid. The interface includes a menu bar (Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Help), a toolbar with various tools, and several panels:

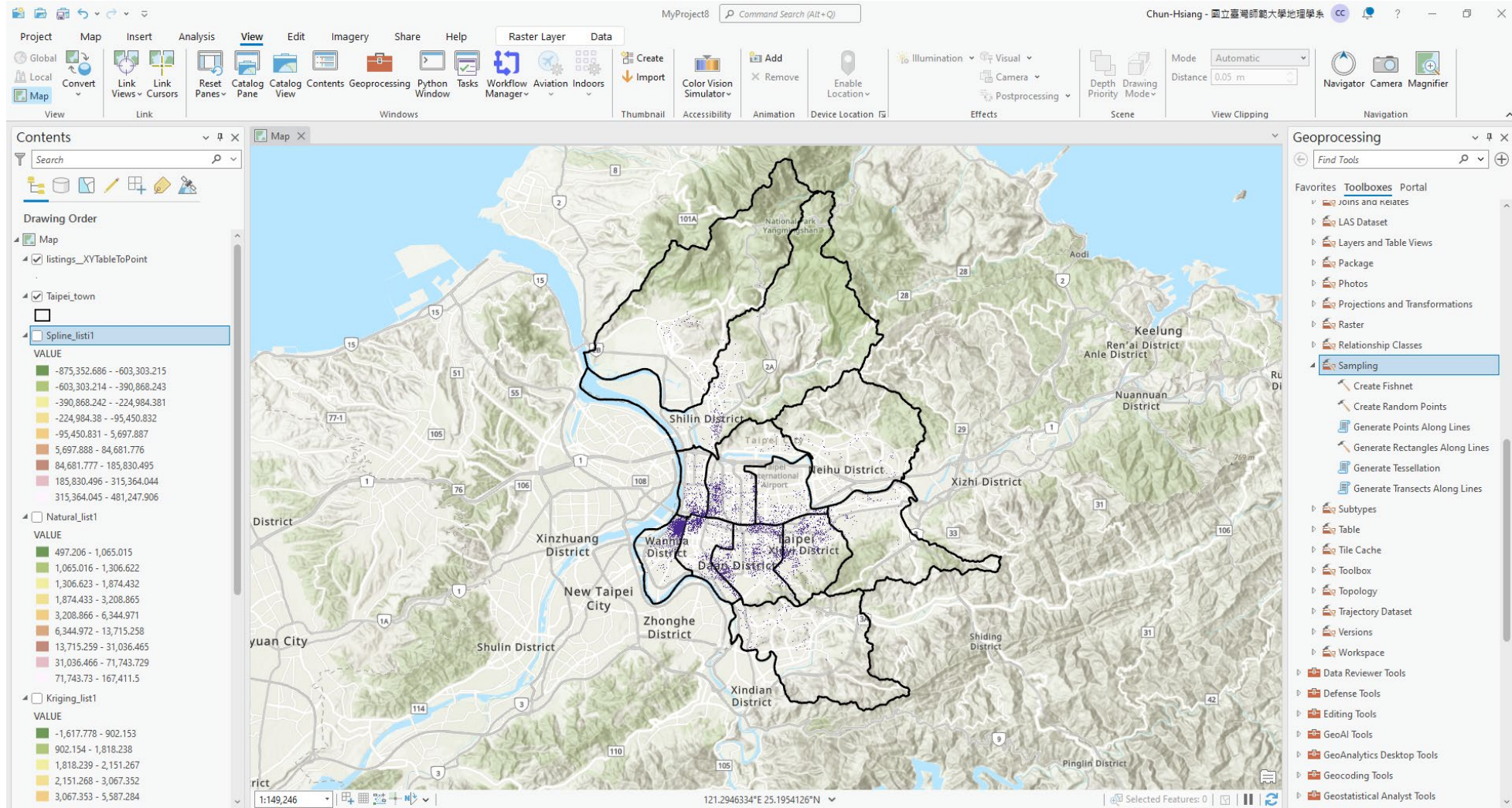
- Contents Panel:** Lists layers and their values. It includes layers like 'listings_XYTableToPoint', 'Taipei_town', 'Natural_list1', 'Kriging_list1', and 'ldw_listings1', each with a color-coded legend and numerical value ranges.
- Geoprocessing Panel:** Shows the 'Spline' tool settings. The 'Parameters' tab is active, showing 'Environments' settings. The 'Output Coordinates' section is set to 'TWD97_OK'. The 'Processing Extent' is set to 'X and Y Extent'. The 'Raster Analysis' section is set to 'Maximum of Inputs' for 'Cell Size' and 'Convert units' for 'Cell Size Projection Method'. The 'Mask' is set to 'Taipei_town'. The 'Snap Raster' is set to 'Automatic'. The 'Geodatabase' section is set to 'Output CONFIG Keyword'. The 'Auto Commit' is set to '1000'. The 'Raster Storage' section is set to '128' for both 'Width' and 'Height'. A 'Run' button is visible at the bottom right of the panel.

The map shows various districts including Shilin District, Xinzhuang District, New Taipei City, Zhonghe District, Xindian District, Beitou District, Neihu District, Beitou District, Xizhi District, Keelung, Ren'ai District, Anle District, Nuannuan District, Shiding District, Pinglin District, and Yuan City. The spline boundary follows the city limits and surrounding areas.

Spline



Create Fishnet for Sampling



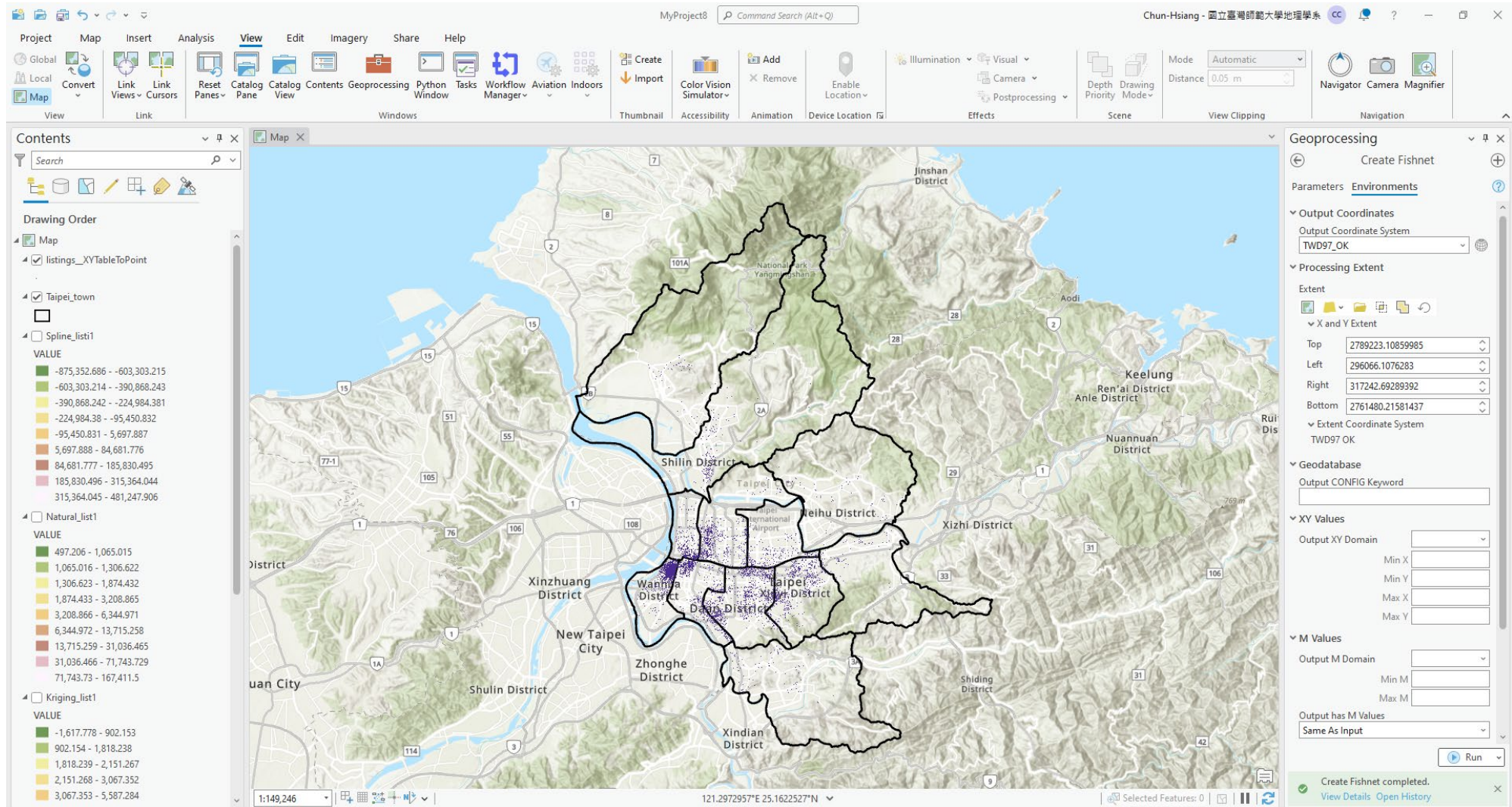
Create 250m x 250m Fishnet

The screenshot shows the ArcGIS Pro interface with the 'Create Fishnet' tool running. The main map area displays a 250m x 250m fishnet grid overlaid on a terrain map of Taipei, Taiwan. The 'Parameters' tab is active, showing the following settings:

- Output Feature Class: Grid_250m.shp
- Fishnet Origin Coordinate: X: 296066.107628305, Y: 2761480.21581437
- Template Extent: X and Y Extent (Top: 2789223.10859985, Left: 296066.1076283, Right: 317242.69289392, Bottom: 2761480.21581437)
- Extent Coordinate System: TWD97 OK
- Y-Axis Coordinate: X: 317242.692893918, Y: 2789223.10859985
- Cell Size Width: 250
- Cell Size Height: 250
- Opposite corner of Fishnet: X: 317242.692893918, Y: 2789223.10859985
- Create Label Points
- Geometry Type: Polygon

The 'Run' button is highlighted, and a status message at the bottom indicates 'Create Fishnet completed.'

Create 250m x 250m Fishnet



Create 250m x 250m Fishnet

The screenshot shows the ArcGIS Pro interface with the 'Create Fishnet' tool active in the Geoprocessing pane. The tool parameters are as follows:

- Output Feature Class:** Grid_250m.shp
- Fishnet Origin Coordinate:** X: 296066.107628305, Y: 2761480.21581437
- Template Extent:** X and Y Extent
- Top:** 2789223.10859985
- Left:** 296066.1076283
- Right:** 317242.69289392
- Bottom:** 2761480.21581437
- Extent Coordinate System:** TWD97 OK
- Y-Axis Coordinate:** X: 296066.107628305, Y: 2761490.21581437
- Cell Size Width:** 250
- Cell Size Height:** 250
- Opposite corner of Fishnet:** X: 317242.692893918, Y: 2789223.10859985
- Create Label Points:**
- Geometry Type:** Polygon

The map shows a 250m x 250m fishnet overlaid on a terrain map of a coastal region. The fishnet is a dark red grid. The map includes labels for various districts such as Jinshan District, Keelung, Ren'ai District, Anle District, Nuannuan District, Xinzhu District, and Shulin District. The status bar at the bottom indicates the coordinates 121.2968962°E 25.1590450°N and a scale of 1:149,246.

Create 1500m x 1500m Fishnet

The screenshot shows the ArcGIS Desktop interface with the 'Create Fishnet' tool open in the Geoprocessing pane. The tool parameters are as follows:

- Output Feature Class: Grid_1500m.shp
- Fishnet Origin Coordinate: X: 296066.107628305, Y: 2761480.21581437
- Template Extent: X and Y Extent
- Top: 2789223.10859985
- Left: 296066.1076283
- Right: 317242.69289392
- Bottom: 2761480.21581437
- Extent Coordinate System: TWD97 OK
- Y-Axis Coordinate: X: 296066.107628305, Y: 2761480.21581437
- Cell Size Width: 1500
- Cell Size Height: 1500
- Opposite corner of Fishnet: X: 317242.692893918, Y: 2789223.10859985
- Create Label Points
- Geometry Type: Polygon

The map shows a green grid overlaid on a terrain map of Keelung, Taiwan. The grid covers a 1500m x 1500m area. The tool has completed the process, as indicated by the 'Create Fishnet completed.' message at the bottom of the Geoprocessing pane.

Create 1500m x 1500m Fishnet

The screenshot shows the ArcGIS Pro interface with the 'Create Fishnet' tool active in the Geoprocessing pane. The tool's parameters are as follows:

- Output Feature Class:** Grid_1500m.shp
- Fishnet Origin Coordinate:** X: 296066.107628305, Y: 2761480.21581437
- Template Extent:** X and Y Extent
- Top:** 2789223.10859985
- Left:** 296066.1076283
- Right:** 317242.69289392
- Bottom:** 2761480.21581437
- Extent Coordinate System:** TWD97 OK
- Y-Axis Coordinate:** X: 296066.107628305, Y: 2761490.21581437
- Cell Size Width:** 1500
- Cell Size Height:** 1500
- Opposite corner of Fishnet:** X: 317242.692893918, Y: 2789223.10859985
- Create Label Points:**
- Geometry Type:** Polygon

The map shows a topographic view of the Taipei area with a fishnet grid overlaid. The grid cells are 1500m by 1500m. The map includes labels for various districts such as Shilin, Keelung, and Xindian. The Geoprocessing pane shows a 'Run' button and a status message: 'Create Fishnet completed. View Details Open History'.

Create 1500m x 1500m Fishnet

The screenshot displays the ArcGIS Pro interface with a map of Keelung, Taiwan. A green 1500m x 1500m fishnet grid is overlaid on the map. The Geoprocessing pane on the right shows the 'Create Fishnet' tool parameters:

- Output Feature Class: Grid_1500m.shp
- Fishnet Origin Coordinate: X: 296066.107628305, Y: 2761480.21581437
- Template Extent: X and Y Extent: Top: 2789223.10859985, Left: 296066.1076283, Right: 317242.69289392, Bottom: 2761480.21581437
- Extent Coordinate System: TWD97 OK
- Y-Axis Coordinate: X: 296066.107628305, Y: 2761480.21581437
- Cell Size Width: 1500
- Cell Size Height: 1500
- Opposite corner of Fishnet: X: 317242.692893918, Y: 2789223.10859985
- Create Label Points:
- Geometry Type: Polygon

The map shows various districts including Jinshan District, Keelung Ren'ai District, Anle District, Nuannuan District, Xinzhu District, and Shulin District. The map scale is 1:149,246 and the coordinates are 121.2975052°E 25.0870301°N.

Create 2500m x 2500m Fishnet

MyProject8 Command Search (Alt+Q) Chun-Hsiang - 國立臺灣師範大學地理學系

Project Map Insert Analysis View Edit Imagery Share Help Feature Layer Labeling Data

Global Local Convert Link Views Link Cursors Reset Panes Catalog Pane Catalog View Contents Geoprocessing Python Window Tasks Workflow Manager Aviation Indoors

Create Import Color Vision Simulator Add Remove Enable Location Illumination Visual Camera Postprocessing Depth Priority Drawing Mode Mode Automatic Distance 0.05 m Navigator Camera Magnifier

Contents Map X

Map X

Geoprocessing Create Fishnet

Parameters Environments

Output Feature Class Grid_2500m.shp

Fishnet Origin Coordinate X 296066.107628305 Y 2761480.21581437

Template Extent X and Y Extent Top 2789223.10859985 Left 296066.1076283 Right 317242.69289392 Bottom 2761480.21581437 Extent Coordinate System TWD97 OK

Y-Axis Coordinate X 296066.107628305 Y 2761490.21581437

Cell Size Width 2500

Cell Size Height 2500

Opposite corner of Fishnet X 317242.692893918 Y 2789223.10859985

Create Label Points

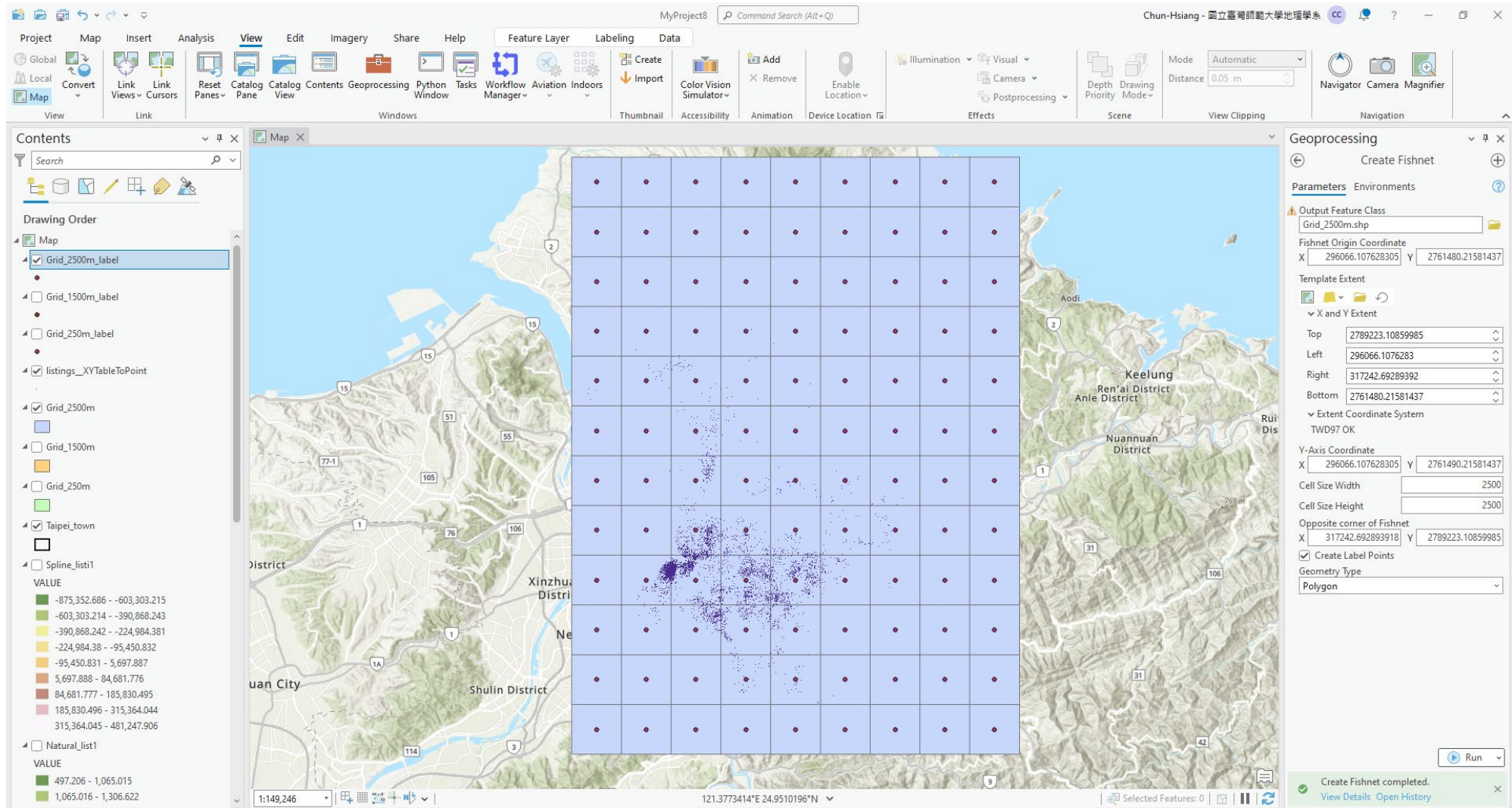
Geometry Type Polygon

Run

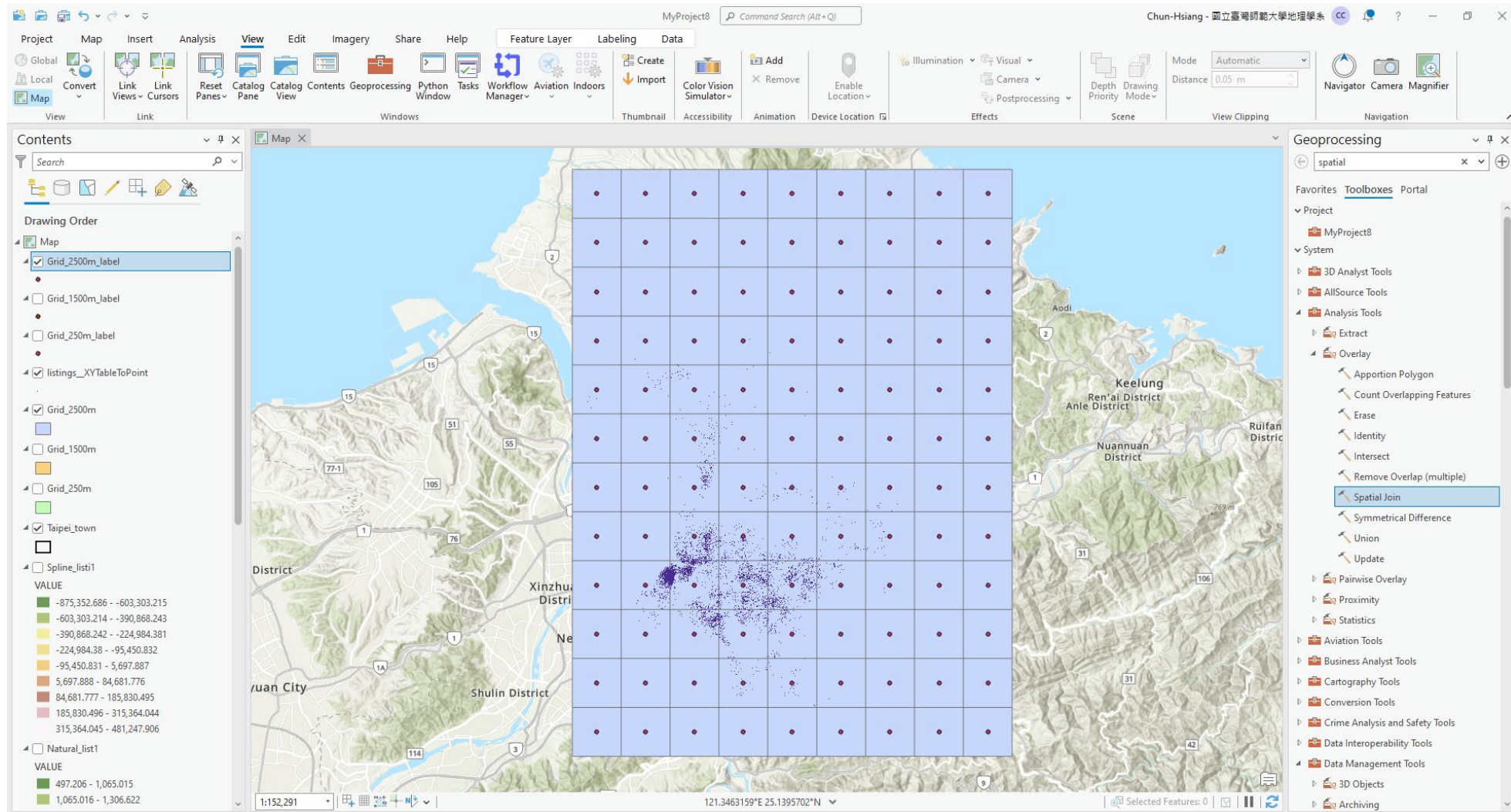
Create Fishnet completed. View Details Open History

1:149,246 121.3000988°E 25.1872021°N Selected Features: 0

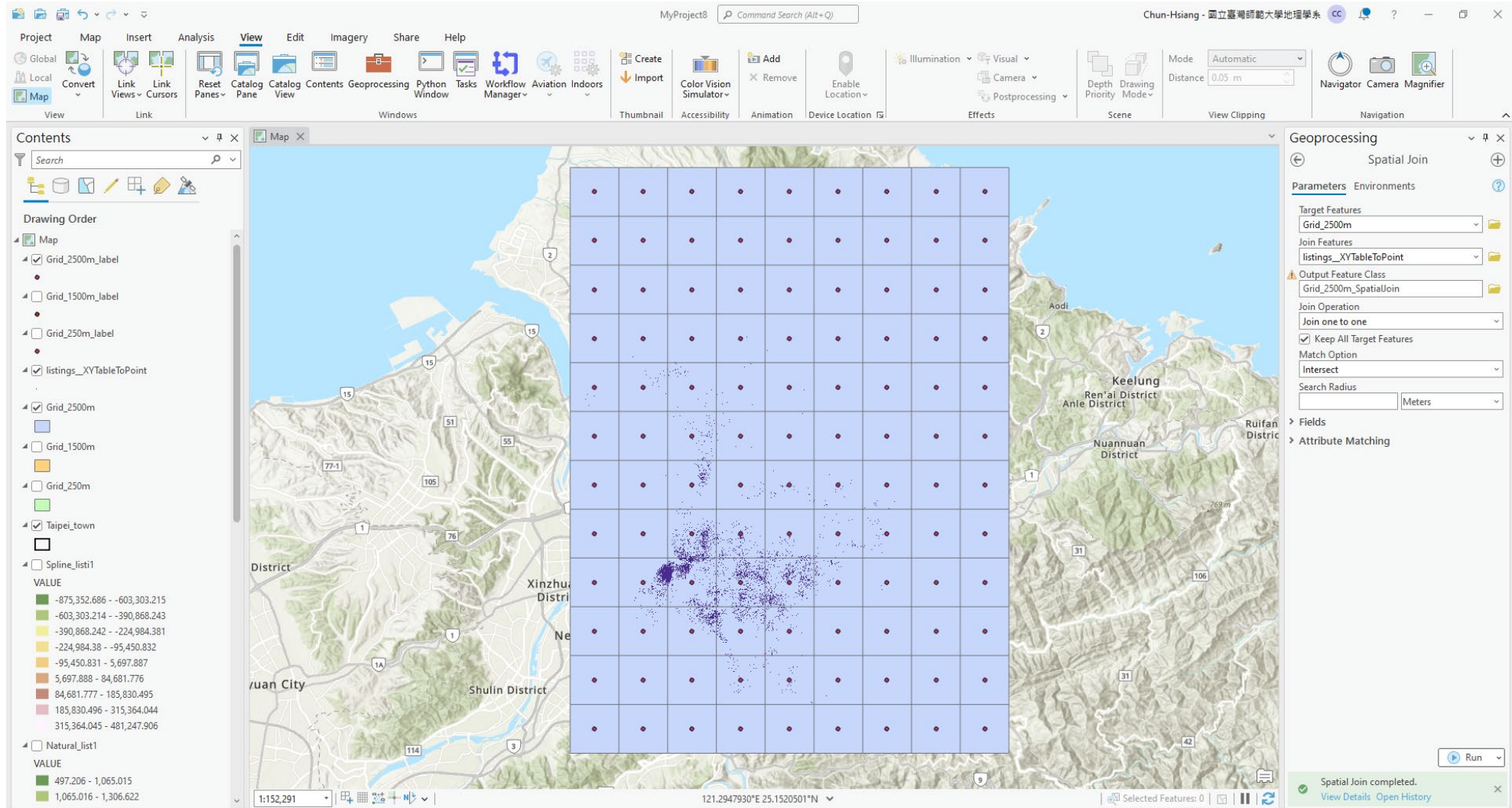
Create 2500m x 2500m Fishnet



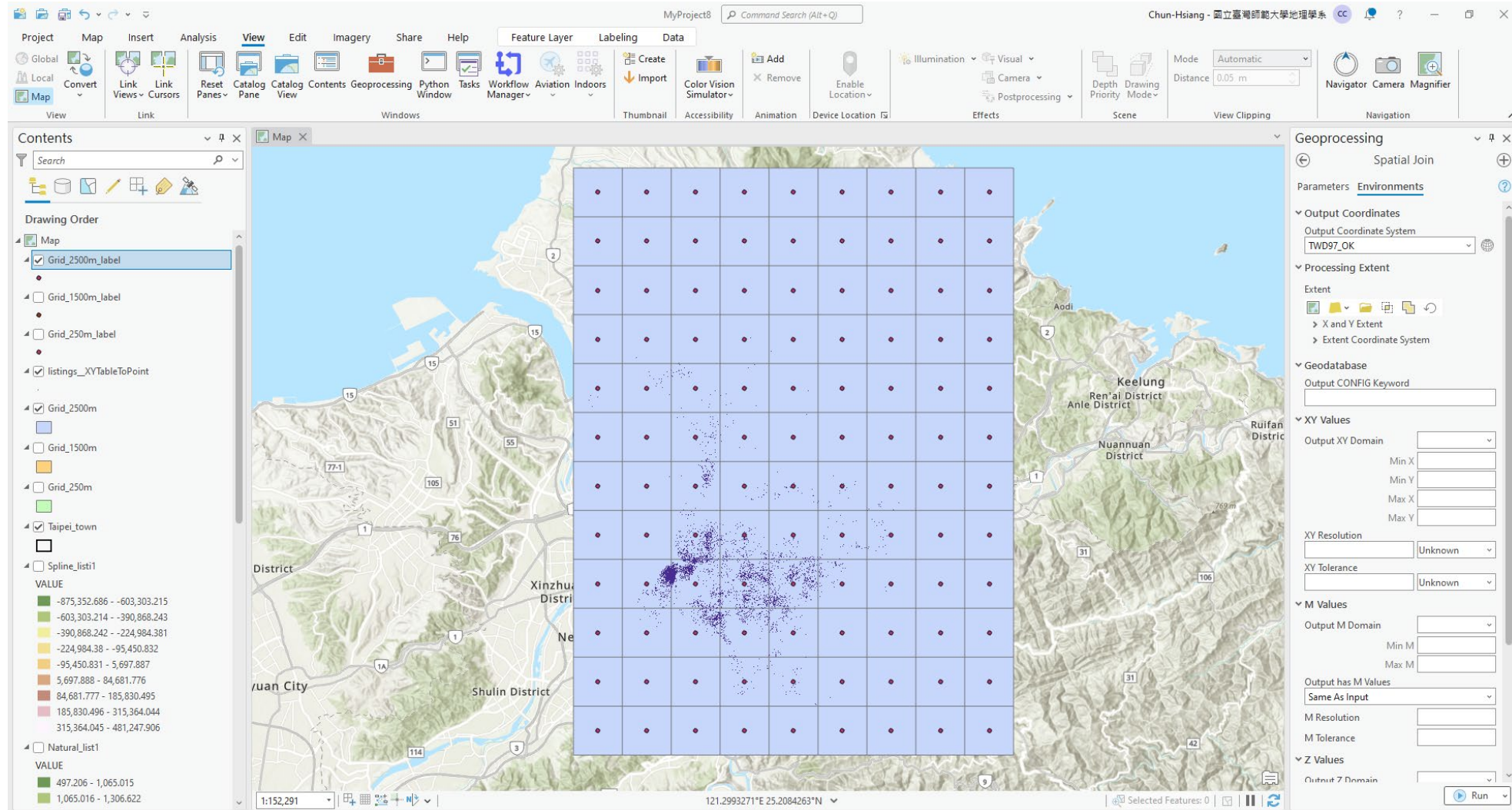
Spatial Join for Counting Number of Airbnb Listings



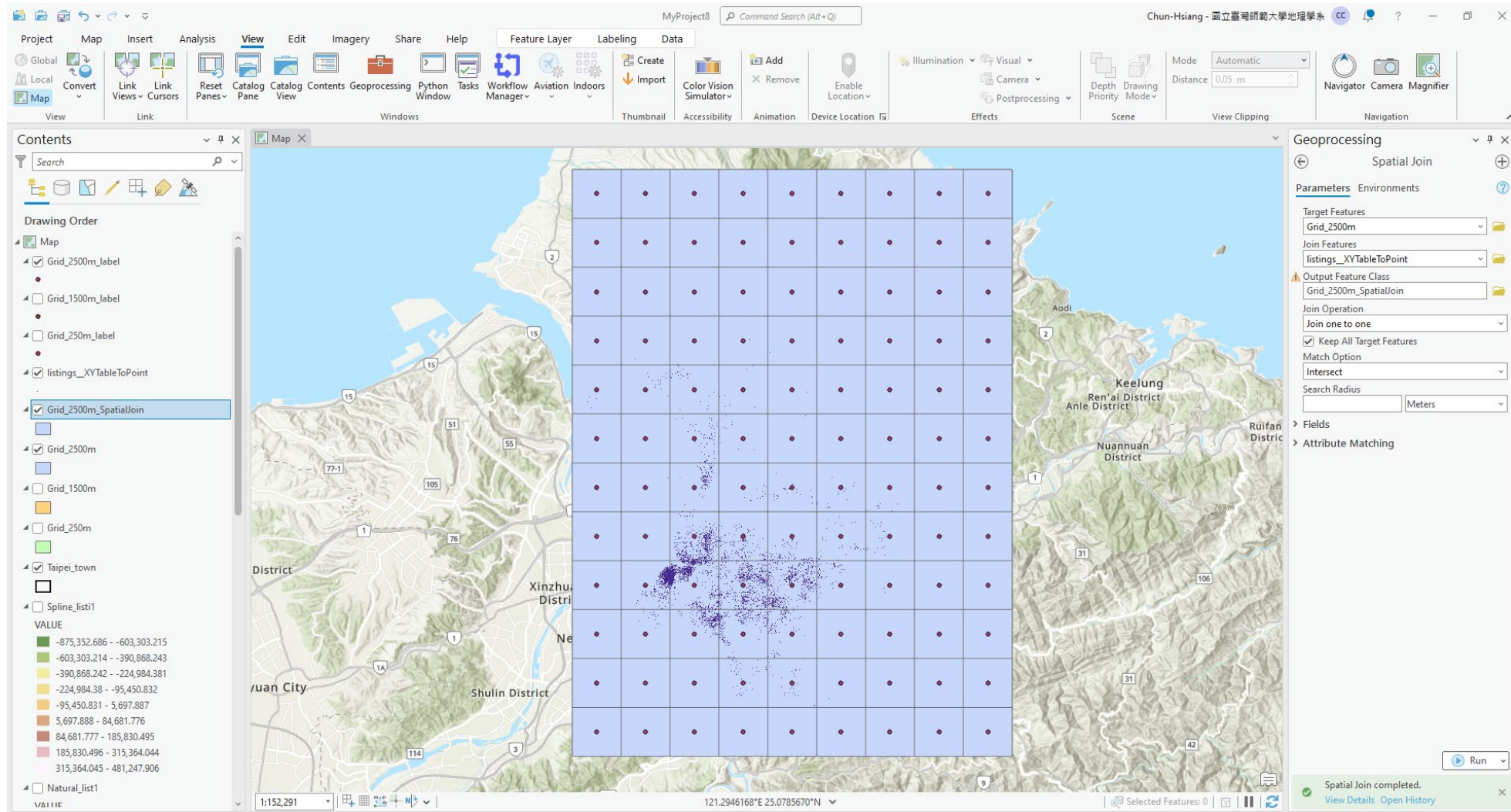
Spatial Join for Counting Number of Airbnb Listings



Spatial Join for Counting Number of Airbnb Listings



Spatial Join for Counting Number of Airbnb Listings

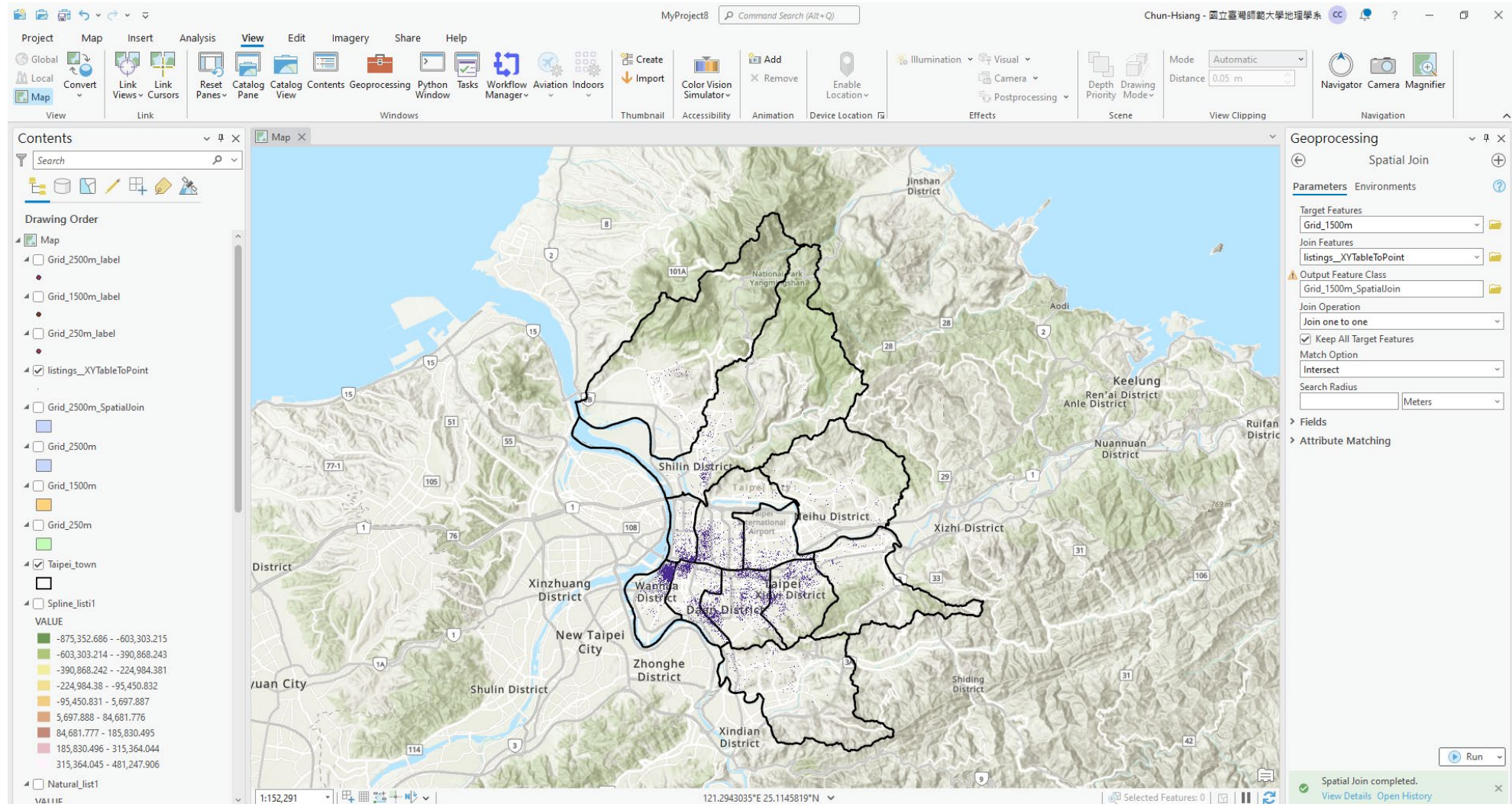


Spatial Join for Counting Number of Airbnb Listings

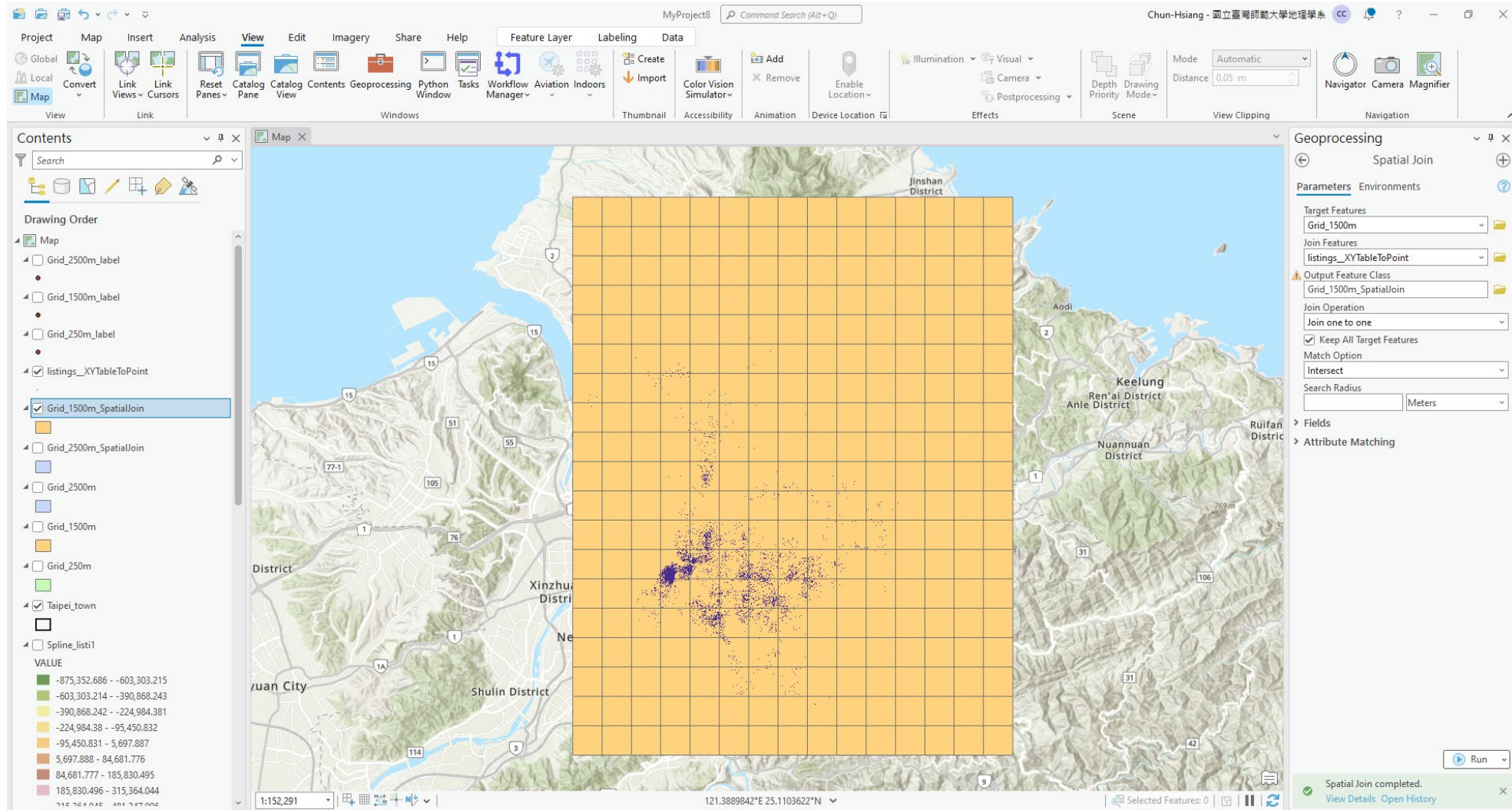
The screenshot shows the ArcGIS Pro interface with a spatial join operation in progress. The map displays a grid of 2500m cells overlaid on a city map. The Geoprocessing pane shows the 'Spatial Join' tool with 'Grid_2500m' as the target and 'listings_XYTableToPoint' as the join features. The resulting 'Grid_2500m_SpatialJoin' layer is visible in the Contents pane. A table below shows the output data with columns for OBJECTID, Shape, Join_Count, and various listing attributes.

OBJECTID	Shape	Join_Count	TARGET_FID	Id	id	name	host_id	host_name	neighbourhood_group	neighbourhood	latitude	longitude	room_type	price	mini
1	30	Polygon	1384	29	0	1297987	5992856	John + Annie	<Null>	中正區	25.04727	121.51671	Entire home/apt	2604	
2	29	Polygon	884	28	0	2257226	Meander Hostel Taipei...	11528101	維源	萬華區	25.04328	121.50159	Shared room	350	
3	31	Polygon	713	30	0	68398	Tonghua Studio C nea...	339014	Lisa	大安區	25.028775	121.554686	Entire home/apt	1107	
4	39	Polygon	611	38	0	1701140	A-B1《月租》《可短租...	906344	Lily	中山區	25.05258	121.52132	Entire home/apt	1251	
5	32	Polygon	594	31	0	963051	短期租屋套房,台北101...	5247611	Fiona	信義區	25.03648	121.5581	Private room	2000	
6	21	Polygon	270	20	0	761561	Studio with kitchen n...	4014285	Pei	中正區	25.02463	121.52318	Entire home/apt	2279	
7	22	Polygon	234	21	0	271733	Taipei Rooftop - Whol...	242033	Robyn And David	文山區	25.00581	121.55518	Entire home/apt	1350	
8	40	Polygon	193	39	0	1631691	SUITE Near MRT 3 Min...	8642499	Foreverinn	中山區	25.06117	121.54287	Entire home/apt	1697	
9	48	Polygon	132	47	0	1838528	Shilin Night Market Su...	9610268	Simon	士林區	25.08967	121.52408	Private room	1338	
10	23	Polygon	103	22	0	2429479	Deluxe Xinhai MRT ap...	8478209	Eric	文山區	25.00726	121.55892	Private room	11143	
11	41	Polygon	88	40	0	1072856	Classic Mini Room	5785514	小公館人文旅舍	松山區	25.05152	121.56966	Hotel room	2294	
12	57	Polygon	60	56	0	1599241	Tianmu long-term Ho...	6378689	Wei Wei	士林區	25.11179	121.52735	Private room	5000	
13	33	Polygon	59	32	0	3485675	提議大套房-Taipei MRT...	11416408	Helen	信義區	25.03824	121.58231	Private room	1525	

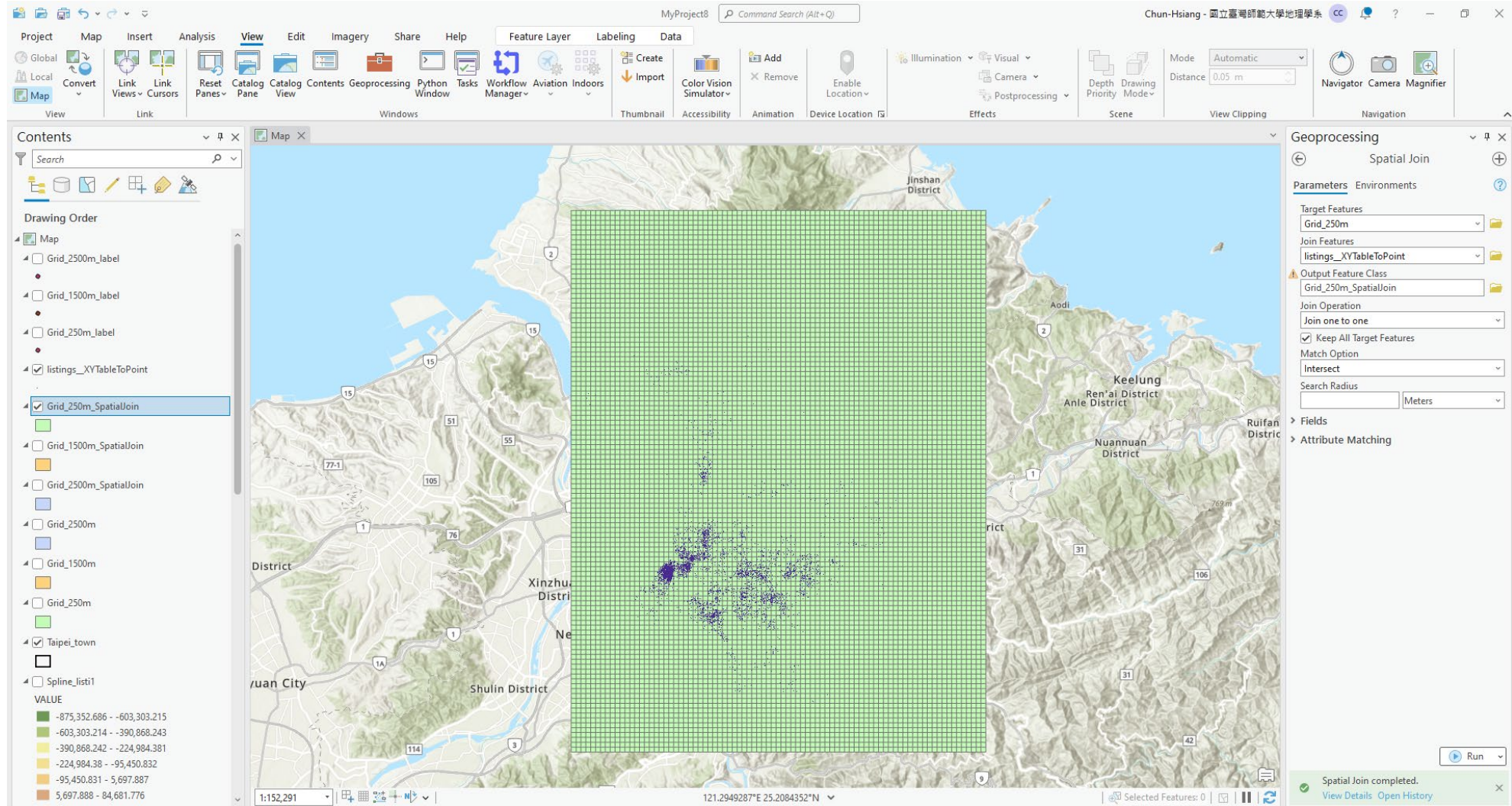
Spatial Join for Counting Number of Airbnb Listings



Spatial Join for Counting Number of Airbnb Listings



Spatial Join for Counting Number of Airbnb Listings



Symbology – Grid 250m

The screenshot displays the ArcGIS Desktop interface with a 250m grid overlaid on a map of Keelung, Taiwan. The grid is colored yellow, and a central cluster of points is colored purple. The interface includes a ribbon, a Contents pane, and a Symbology pane.

Contents Pane:

- Map
- Grid_2500m_label
- Grid_1500m_label
- Grid_250m_label
- listings_XYTableToPoint
- Grid_250m_SpatialJoin**
 - Join_Count
 - 0 - 1
 - 2 - 10
 - 11 - 15
 - 16 - 20
 - 21 - 25
 - 26 - 30
 - 31 - 35
 - 36 - 40
 - 41 - 45
 - 46 - 50
 - 51 - 55
 - 56 - 60
 - 61 - 65
 - 66 - 70
 - 71 - 75
 - 76 - 80
 - 81 - 85
 - 86 - 90
 - 91 - 95
 - 96 - 100
 - 101 - 105
 - 106 - 110
 - 111 - 115
 - 116 - 120

Symbology - Grid_250m_Sp... Pane:

Primary symbology

Graduated Colors

Field: Join_Count

Normalization: <None>

Method: Manual Interval

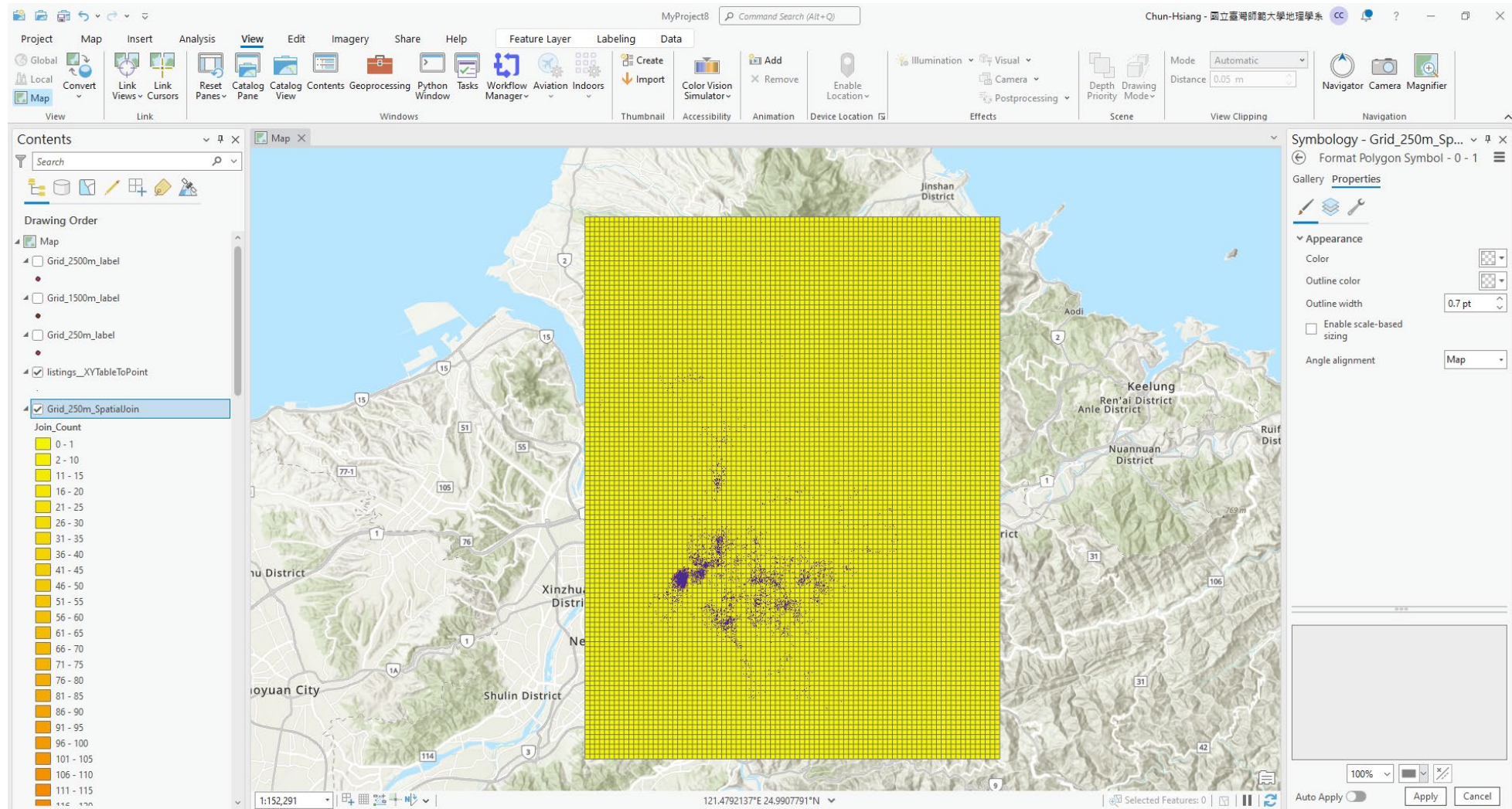
Classes: 53

Color scheme: [Color ramp]

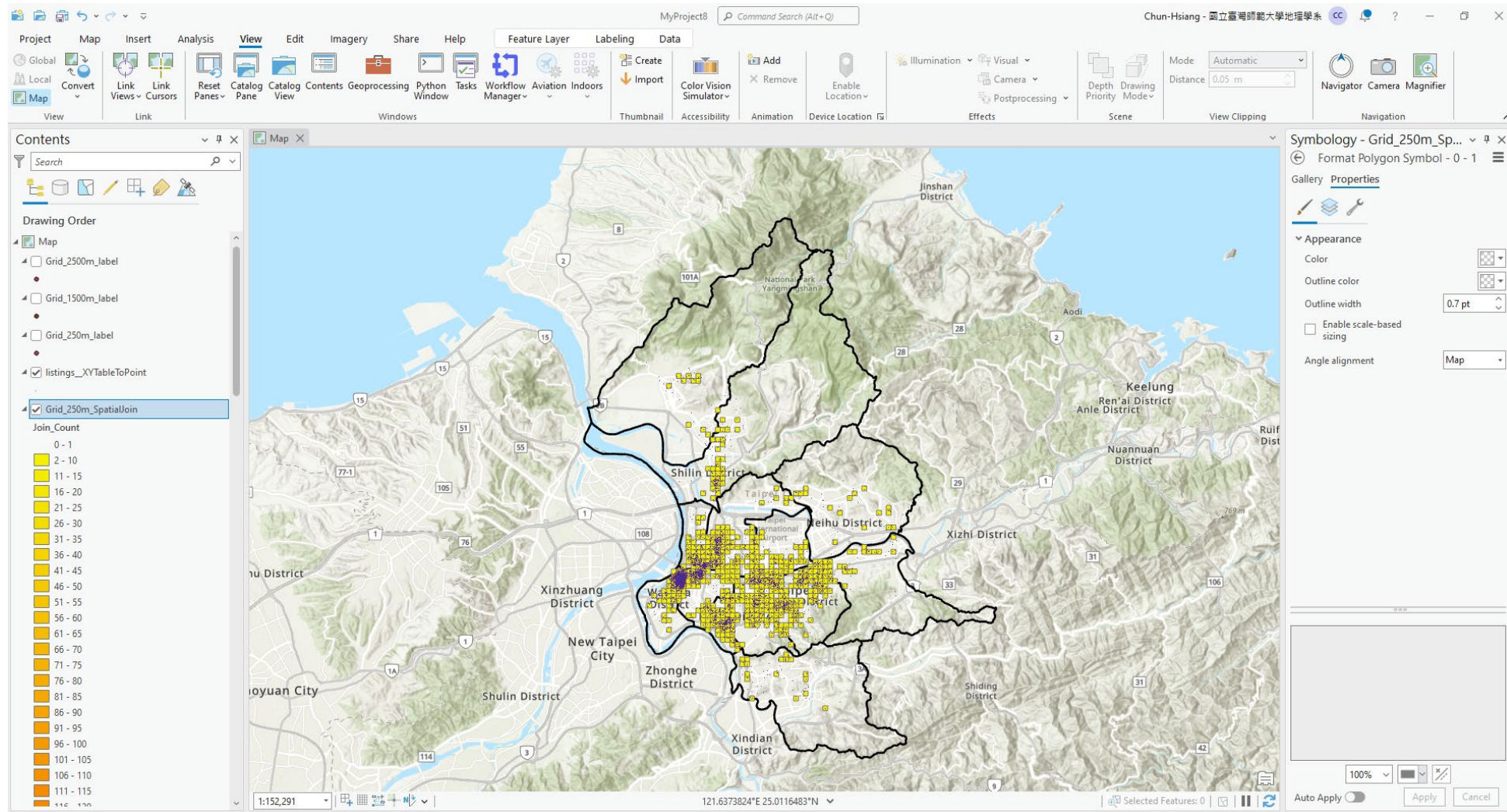
Classes:

Symbol	Upper value	Label
[Yellow]	≤ 1	0 - 1
[Yellow]	≤ 10	2 - 10
[Yellow]	≤ 15	11 - 15
[Yellow]	≤ 20	16 - 20
[Yellow]	≤ 25	21 - 25
[Yellow]	≤ 30	26 - 30
[Yellow]	≤ 35	31 - 35
[Yellow]	≤ 40	36 - 40
[Yellow]	≤ 45	41 - 45
[Yellow]	≤ 50	46 - 50
[Yellow]	≤ 55	51 - 55
[Yellow]	≤ 60	56 - 60
[Yellow]	≤ 65	61 - 65
[Yellow]	≤ 70	66 - 70
[Yellow]	≤ 75	71 - 75
[Yellow]	≤ 80	76 - 80
[Yellow]	≤ 85	81 - 85

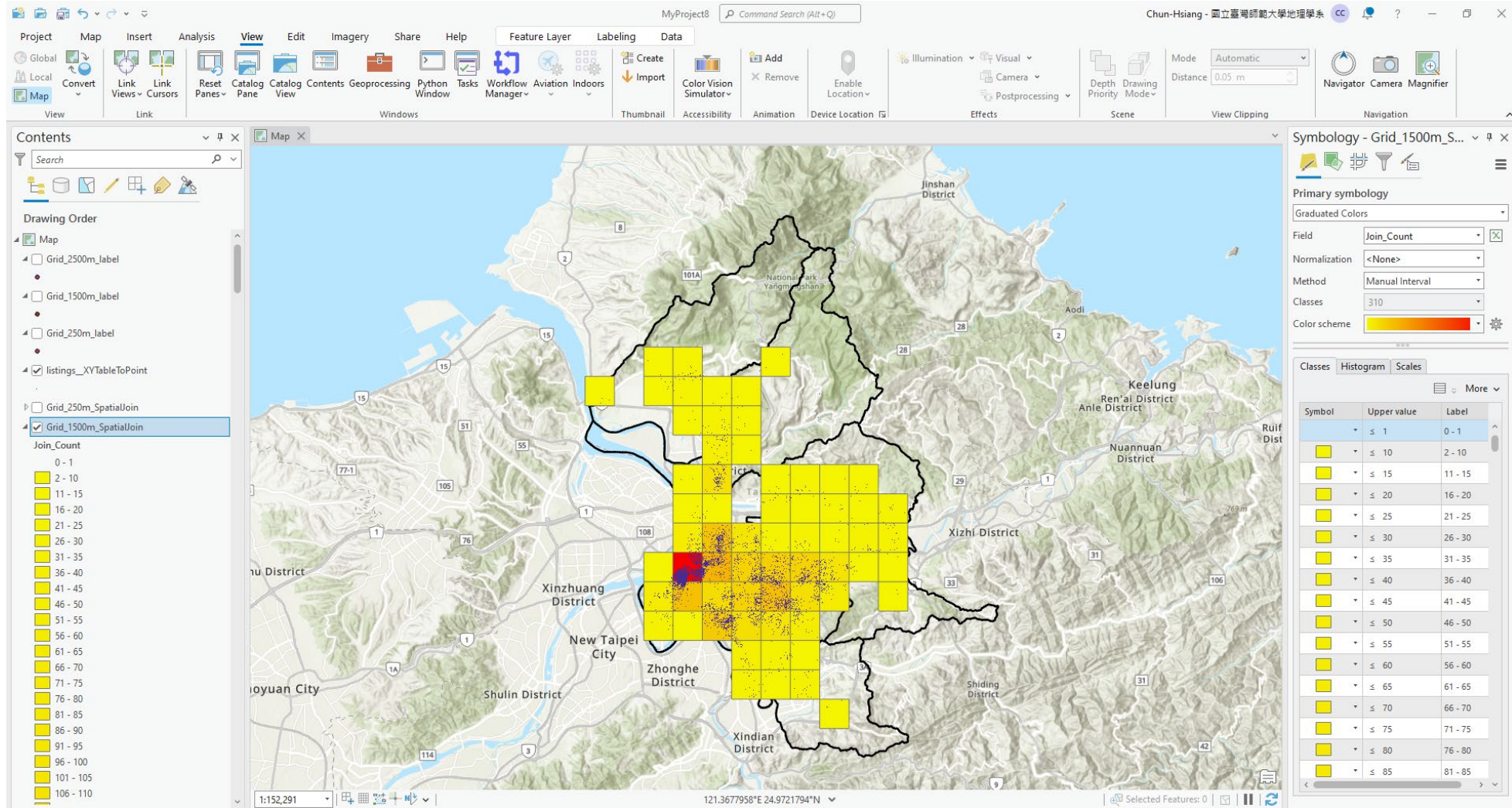
Symbology – Grid 250m



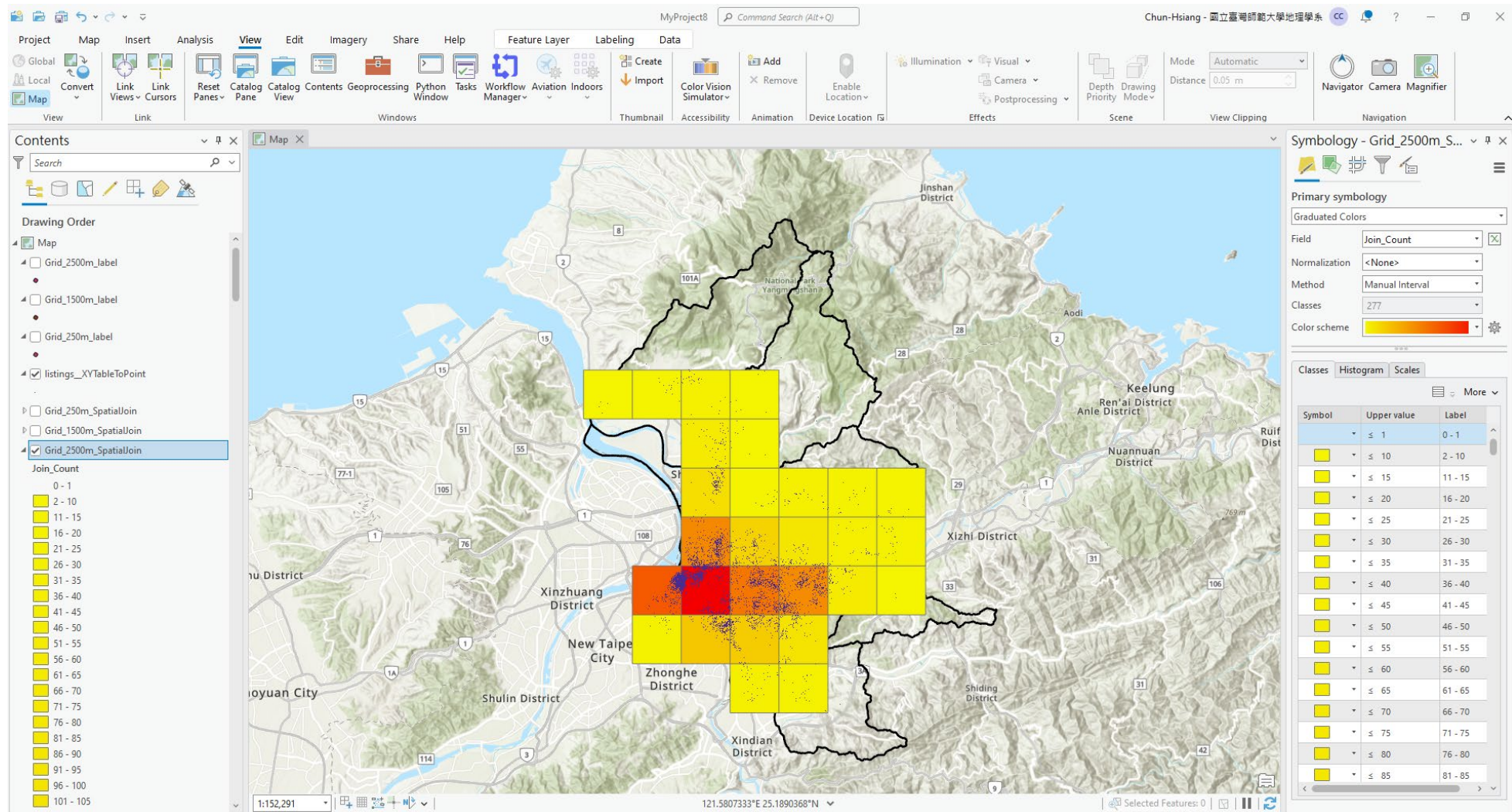
Symbology – Grid 250m



Symbology – Grid 1500m



Symbology – Grid 2500m



MAUP Observation

- What do you found the spatial distribution differences in the three gridding sizes?
- ...
- ...
- ...
- ...



The End

Thank you for your attention!

| Email: chchan@ntnu.edu.tw
Web: toodou.github.io