



Geographic Information System

Vector Data – Part II Lab Practice - 2

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Symbology :: Polygon

Excel/ Join Features/ Single Symbol/ Unique Values/ Graduated Colors/
Bivariate Colors/ Unclassed Colors/ Proportional Symbols/ Graduated
Symbols/ Dot Density/ Bar Chart/ Pie Chart/ Stacked Chart

Procedure for Symbology

- 1) **Excel** :: Data Preprocessing for Population Data
- 2) **GeoAnalytics Desktop Tools/Join Features** from POP data to Taipei Village Layer
- 3) **Symbology :: Single Symbol**
- 4) **Symbology :: Unique Values** with District
- 5) **Symbology :: Graduated Colors** with P_CNT
- 6) **Symbology :: Bivariate Colors** with P_CNT
- 7) **Symbology :: Unclassed Colors** with P_CNT
- 8) **Symbology :: Proportional Symbols** for Polygon with P_CNT
- 9) **Symbology :: Dot Density** for Polygon (M/F)
- 10) **Symbology :: Bar Chart** for Polygon (M/F)
- 11) **Symbology :: Pie Chart** for Polygon (M/F)
- 12) **Symbology :: Stacked Chart** for Polygon (M/F)

Excel :: Data Preprocessing for Population Data

1	COUNTY_ID	COUNTY	TOWN_ID	TOWN	V_ID	VILLAGE	H_CNT	P_CNT	M_CNT	F_CNT	INFO_TIME
2	縣市代碼	縣市名稱	鄉鎮市區代碼	鄉鎮市區名稱	村里代碼	村里名稱	戶數	人口數	男性人口數	女性人口數	資料時間
3	63000	臺北市	63000010	松山區	63000010-002	莊敬里	2039	5039	2395	2644	113Y06M
4	63000	臺北市	63000010	松山區	63000010-003	東榮里	3073	8035	3718	4317	113Y06M
5	63000	臺北市	63000010	松山區	63000010-004	三民里	2871	6596	3011	3585	113Y06M
6	63000	臺北市	63000010	松山區	63000010-005	新益里	1840	4399	2100	2299	113Y06M
7	63000	臺北市	63000010	松山區	63000010-006	富錦里	2140	5071	2299	2772	113Y06M
8	63000	臺北市	63000010	松山區	63000010-007	新東里	2032	4771	2258	2513	113Y06M
9	63000	臺北市	63000010	松山區	63000010-008	富泰里	2052	4472	1955	2517	113Y06M
10	63000	臺北市	63000010	松山區	63000010-009	介壽里	1760	4538	2143	2395	113Y06M
11	63000	臺北市	63000010	松山區	63000010-010	精忠里	1759	4433	2043	2390	113Y06M
12	63000	臺北市	63000010	松山區	63000010-011	東光里	2955	6607	3076	3531	113Y06M
13	63000	臺北市	63000010	松山區	63000010-012	龍田里	4395	11194	5211	5983	113Y06M
14	63000	臺北市	63000010	松山區	63000010-013	東昌里	1026	2642	1207	1435	113Y06M
15	63000	臺北市	63000010	松山區	63000010-014	東勢里	2564	6595	3047	3548	113Y06M
16	63000	臺北市	63000010	松山區	63000010-015	中華里	3545	8631	3945	4686	113Y06M
17	63000	臺北市	63000010	松山區	63000010-016	民有里	2246	5864	2724	3140	113Y06M
18	63000	臺北市	63000010	松山區	63000010-017	民福里	4454	9748	3847	4101	113Y06M
19	63000	臺北市	63000010	松山區	63000010-018	慈祐里	3636	7806	3664	4142	113Y06M
20	63000	臺北市	63000010	松山區	63000010-019	安平里	1986	4586	2139	2447	113Y06M
21	63000	臺北市	63000010	松山區	63000010-020	鵬程里	3645	8851	4070	4781	113Y06M
22	63000	臺北市	63000010	松山區	63000010-021	自強里	3358	7694	3578	4116	113Y06M
23	63000	臺北市	63000010	松山區	63000010-022	吉祥里	3305	7486	3443	4043	113Y06M
24	63000	臺北市	63000010	松山區	63000010-024	新聚里	2497	5959	2791	3168	113Y06M
25	63000	臺北市	63000010	松山區	63000010-025	復盛里	3923	10265	4762	5503	113Y06M
26	63000	臺北市	63000010	松山區	63000010-026	中正里	1747	4408	2059	2349	113Y06M
27	63000	臺北市	63000010	松山區	63000010-027	中崙里	1350	3578	1673	1905	113Y06M
28	63000	臺北市	63000010	松山區	63000010-028	美仁里	1571	4028	1906	2122	113Y06M
29	63000	臺北市	63000010	松山區	63000010-029	吉仁里	2570	6930	3320	3610	113Y06M
30	63000	臺北市	63000010	松山區	63000010-030	敦化里	1355	3594	1703	1891	113Y06M
31	63000	臺北市	63000010	松山區	63000010-031	復源里	1877	4636	2196	2440	113Y06M
32	63000	臺北市	63000010	松山區	63000010-032	復建里	2659	6392	2922	3470	113Y06M
33	63000	臺北市	63000010	松山區	63000010-033	復勢里	1020	2668	1219	1449	113Y06M
34	63000	臺北市	63000010	松山區	63000010-034	福成里	1502	3506	1594	1912	113Y06M
35	63000	臺北市	63000010	松山區	63000010-035	松林里					

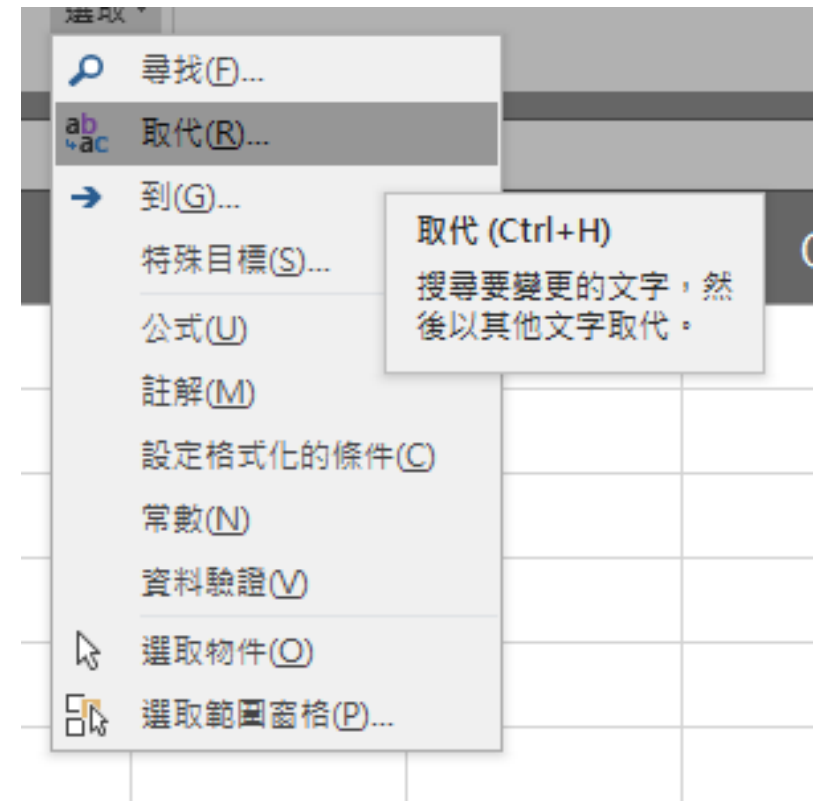
Two rows, which are used to show the column name, are redundant.

There is a dash in the V_ID.

Excel :: Data Preprocessing for Population Data

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	COUNTY_ID	COUNTY	TOWN_ID	TOWN	V_ID	VILLAGE	H_CNT	P_CNT	M_CNT	F_CNT	INFO_TIME			
2	63000	臺北市	63000010	松山區	63000010-002	莊敬里	2039	5039	2395	2644	113Y06M			
3	63000	臺北市	63000010	松山區	63000010-003	東榮里	3073	8035	3718	4317	113Y06M			
4	63000	臺北市	63000010	松山區	63000010-004	三民里	2871	6596	3011	3585	113Y06M			
5	63000	臺北市	63000010	松山區	63000010-005	新益里	1840	4399	2100	2299	113Y06M			
6	63000	臺北市	63000010	松山區	63000010-006	富錦里	2140	5071	2299	2772	113Y06M			
7	63000	臺北市	63000010	松山區	63000010-007	新東里	2032	4771	2258	2513	113Y06M			
8	63000	臺北市	63000010	松山區	63000010-008	富泰里	2052	4472	1955	2517	113Y06M			
9	63000	臺北市	63000010	松山區	63000010-009	介壽里	1760	4538	2143	2395	113Y06M			
10	63000	臺北市	63000010	松山區	63000010-010	精忠里	1759	4433	2043	2390	113Y06M			
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12	63000	臺北市	63000010	松山區	63000010-012	龍田里	4395	11194	5211	5983	113Y06M			
13	63000	臺北市	63000010	松山區	63000010-013	東昌里	1026	2642	1207	1435	113Y06M			
14	63000	臺北市	63000010	松山區	63000010-014	東勢里	1815	4264	1990	2274	113Y06M			
15	63000	臺北市	63000010	松山區	63000010-015	中華里	2564	6595	3047	3548	113Y06M			
16	63000	臺北市	63000010	松山區	63000010-016	民有里	3545	8631	3945	4686	113Y06M			
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18	63000	臺北市	63000010	松山區	63000010-018	慈祐里	4354	7948	3847	4101	113Y06M			
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24	63000	臺北市	63000010	松山區	63000010-025	復盛里	2497	5959	2791	3168	113Y06M			
25	63000	臺北市	63000010	松山區	63000010-026	中正里	3923	10265	4762	5503	113Y06M			
26	63000	臺北市	63000010	松山區	63000010-027	中崙里	1747	4408	2059	2349	113Y06M			
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28	63000	臺北市	63000010	松山區	63000010-029	吉仁里	1571	4028	1906	2122	113Y06M			
29	63000	臺北市	63000010	松山區	63000010-030	敦化里	2570	6930	3320	3610	113Y06M			
30	63000	臺北市	63000010	松山區	63000010-031	復源里	1355	3594	1703	1891	113Y06M			
31	63000	臺北市	63000010	松山區	63000010-032	復建里	1877	4636	2196	2440	113Y06M			
32	63000	臺北市	63000010	松山區	63000010-033	復勢里	2659	6392	2922	3470	113Y06M			
33	63000	臺北市	63000010	松山區	63000010-034	福成里	1020	2668	1219	1449	113Y06M			
34	63000	臺北市	63000010	松山區	63000010-035	松基里	1502	3506	1594	1912	113Y06M			
35	63000	臺北市	63000020	信義區	63000020-001	西村田	1827	4318	1976	2342	113Y06M			

Find all “dash” and replace by blank “”.

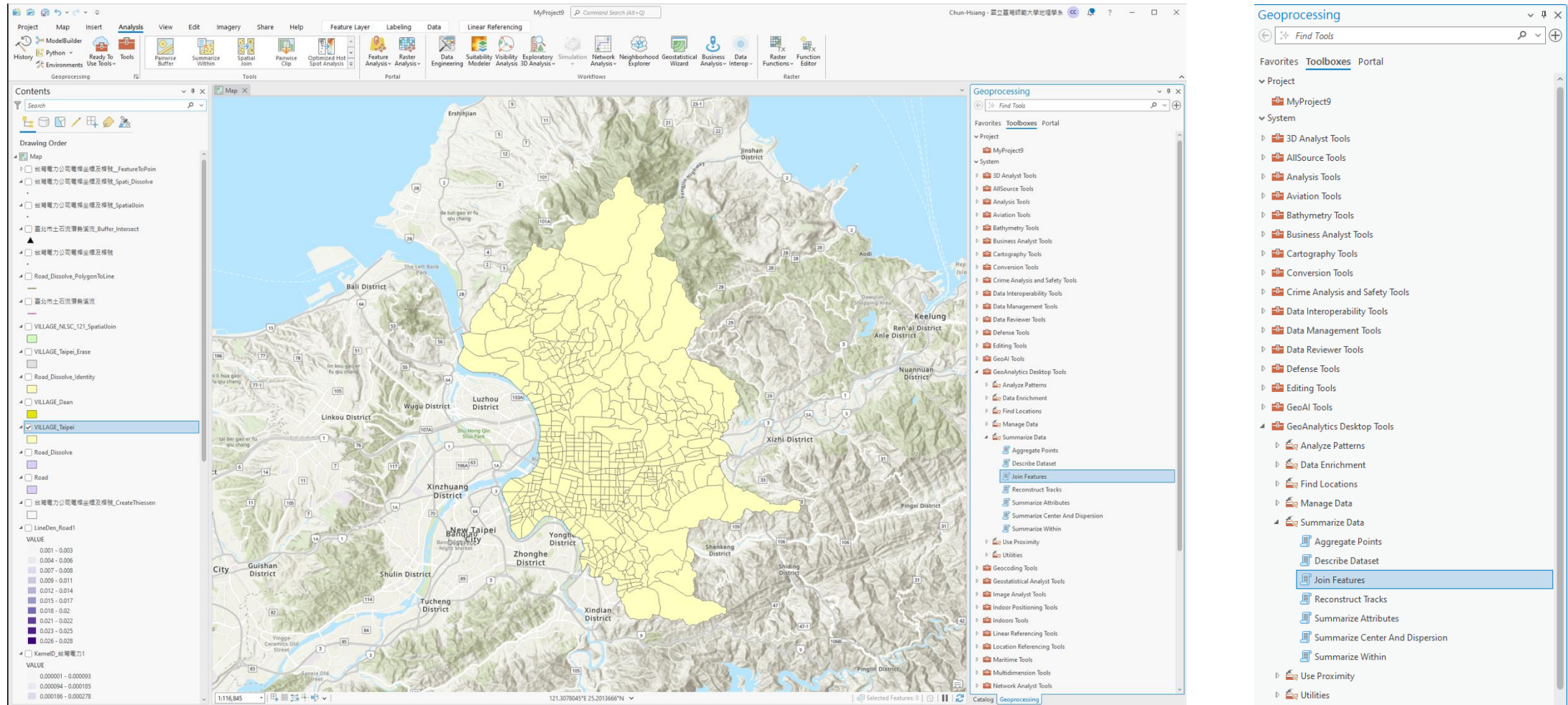


Excel :: Data Preprocessing for Population Data

The image displays two side-by-side screenshots of an Excel spreadsheet titled "113年6月行政區人口統計_村里_臺北市.csv - Excel". The spreadsheet contains population data for various villages in Taipei City, organized into columns for administrative levels and population counts.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	COUNTY_ID	COUNTY	TOWN_ID	TOWN	V_ID	VILLAGE	H_CNT	P_CNT	M_CNT	F_CNT	INFO_TIME		
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9	63000	臺北市	63000010	松山區	63000010-009	介壽里	1760	4538	2143	2395	113Y06M		
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13	63000	臺北市	63000010	松山區	63000010-013	東昌里	1026	2642	1207	1435	113Y06M		
14	63000	臺北市	63000010	松山區	63000010-014	東勢里	1815	4264	1990	2274	113Y06M		
15	63000	臺北市	63000010	松山區	63000010-015	中華里	2564	6595	3047	3548	113Y06M		
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20	63000	臺北市	63000010	松山區	63000010-020	鵬程里	1986	4586	2139	2447	113Y06M		
21	63000	臺北市	63000010	松山區	63000010-021	自強里	3645	8851	4070	4781	113Y06M		
22	63000	臺北市	63000010	松山區	63000010-022	吉祥里	3358	7694	3578	4116	113Y06M		
23	63000	臺北市	63000010	松山區	63000010-023	新聚里	3305	7486	3443	4043	113Y06M		
24	63000	臺北市	63000010	松山區	63000010-024	復盛里	2497	5959	2791	3168	113Y06M		
25	63000	臺北市	63000010	松山區	63000010-026	中正里	3923	10265	4762	5503	113Y06M		
26	63000	臺北市	63000010	松山區	63000010-027	中崙里	1747	4408	2059	2349	113Y06M		
27	63000	臺北市	63000010	松山區	63000010-028	美仁里	1350	3578	1673	1905	113Y06M		
28	63000	臺北市	63000010	松山區	63000010-029	吉仁里	1571	4028	1906	2122	113Y06M		
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33	63000	臺北市	63000010	松山區	63000010-034	福成里	1020	2668	1219	1449	113Y06M		
34	63000	臺北市	63000010	松山區	63000010-035	松基里	1502	3506	1594	1912	113Y06M		
35	63000	臺北市	63000020	信義區	63000020-001	西村甲	1827	4318	1976	2342	113Y06M		

GeoAnalytics Desktop Tools/Join Features from POP Data to Taipei Village Layer



GeoAnalystics Desktop Tools/Join Features from POP Data to Taipei Village Layer

The screenshot shows the GeoAnalystics Desktop interface with the Join Features tool active. The main map displays a yellow-shaded area representing the Taipei Village Layer. The tool parameters are configured as follows:

- Target Layer:** VILLAGE_Taipei
- Join Layer:** 113年6月行政區人口統計_村里_臺北市.csv
- Output Dataset:** VILLAGE_Taipei_JoinFeatures
- Join Operation:** Join one to one
- Temporal Relationship:** (Empty)
- Attribute Relationship:**
 - Target Field: TOWNNAME, Join Field: TOWN
 - VILLNAME, VILLAGE
- Summary Fields:**
 - Field: P_CNT, Statistic: Sum
 - M_CNT, Sum
 - F_CNT, Sum

GeoAnalystics Desktop Tools/Join Features from POP Data to Taipei Village Layer

The screenshot shows the GeoAnalystics Desktop Tools interface. The main map displays a geographic area of Taipei, Taiwan, with various districts labeled such as Bali District, Wugu District, Linkou District, Xuzhuang District, Xizhi District, Keelung, and Anle District. The map is overlaid with a yellowish grid representing the village layer. The 'Join Features' tool is active in the right-hand pane, showing the following configuration:

- Target Layer: VILLAGE, Taipei
- Join Layer: 113年6月行政區人口統計_村里_臺北市.csv
- Output Dataset: VILLAGE, Taipei, JoinFeatures
- Join Operation: Join one to one
- Keep All Target Features:
- Temporal Relationship: (dropdown)
- Attribute Relationship:
 - Target Field: TOWNNAME, Join Field: TOWN
 - VILLNAME, Join Field: VILLAGE
- Summary Fields:
 - P_CNT: Sum
 - M_CNT: Sum
 - F_CNT: Sum

At the bottom of the interface, a data table is visible, showing the results of the join operation. The table has columns for YNAME, TOWNNAME, VILLNAME, VILLEN, COUNTYID, COUNTYCODE, TOWNID, TOWNCODE, NOTE, COUNT, SUM_P_CNT, SUM_M_CNT, SUM_F_CNT, and SR.

COUNT	SUM_P_CNT	SUM_M_CNT	SUM_F_CNT	SR
1	6607	3076	3531	Pc
1	3640	1729	1911	Pc
1	5152	2198	2954	Pc
1	3695	1603	2092	Pc
1	7237	3344	3893	Pc
1	6175	2927	3248	Pc
1	5452	2458	2994	Pc
1	4134	1943	2191	Pc
1	6551	3109	3442	Pc
1	7948	3847	4101	Pc
1	4640	2194	2446	Pc
1	7999	3841	4158	Pc
1	1264	667	597	Pc
1	4487	2167	2320	Pc
1	6443	3017	3426	Pc
1	4469	2010	2459	Pc
1	7191	3450	3741	Pc
1	4336	2051	2285	Pc
1	6049	2813	3236	Pc
1	9599	4474	5125	Pc

Symbology :: Single Symbol

The screenshot displays the ArcGIS Pro interface. The main map shows a topographic view of Taipei, Taiwan, with various districts labeled. A symbology panel on the right is open for the layer 'VILLAGE_Taipei_JoinFeatures'. The panel is titled 'Symbology - VILLAGE_Taipei_JoinFeatures' and 'Format Polygon Symbol'. It has two tabs: 'Gallery' and 'Properties'. The 'Properties' tab is active, showing the 'Appearance' section. Under 'Appearance', the 'Color' is set to a light green color swatch, the 'Outline color' is black, and the 'Outline width' is 0.75 pt. There are checkboxes for 'Enable scale-based sizing' (unchecked) and 'Angle alignment' (set to 'Map'). Below the 'Appearance' section, there is a 'Primary symbology' dropdown menu set to 'Single Symbol'. Underneath, there are input fields for 'Symbol' (showing a light green square), 'Label', and 'Description'. The 'Contents' pane on the left shows a list of layers, with 'VILLAGE_Taipei_JoinFeatures' selected. The 'Drawing Order' pane is also visible, showing the layer's position relative to other features.

Symbology :: Unique Values with District

The screenshot displays the ArcGIS Pro interface with a map of Taipei, Taiwan, where different districts are highlighted in various colors. The symbology panel on the right is titled 'Symbology - VILLAGE_Taipei_JoinFeatures' and is configured for 'Unique Values'. The 'Field 1' is set to 'TOWNSHIPNAME'. Below this, a color scheme is shown with 12 distinct colors. The 'Classes Scales' table lists the following districts and their corresponding colors:

Symbol	Value	Label
Green	中山區	中山區
Pink	中正區	中正區
Orange	信義區	信義區
Blue	內湖區	內湖區
Yellow	北投區	北投區
Purple	南港區	南港區
Pink	士林區	士林區
Red	大同區	大同區
Light Blue	大安區	大安區
Yellow	文山區	文山區
Light Green	松山區	松山區
Light Green	萬華區	萬華區

Symbology :: Graduated Colors with P_CNT

The screenshot displays the ArcGIS Pro interface with a map of Taipei. The Symbology pane for the layer 'VILLAGE_Taipei_JoinFeatures' is open, showing the 'Graduated Colors' method. The field 'SUM_P_CNT' is selected, and the interval size is set to 1000, resulting in 13 classes. The map shows a color gradient from light yellow to dark blue across the city districts.

Symbology - VILLAGE_Taipei_JoinFeatures

Primary symbology: Graduated Colors

Field: SUM_P_CNT

Normalization: <None>

Method: Defined Interval

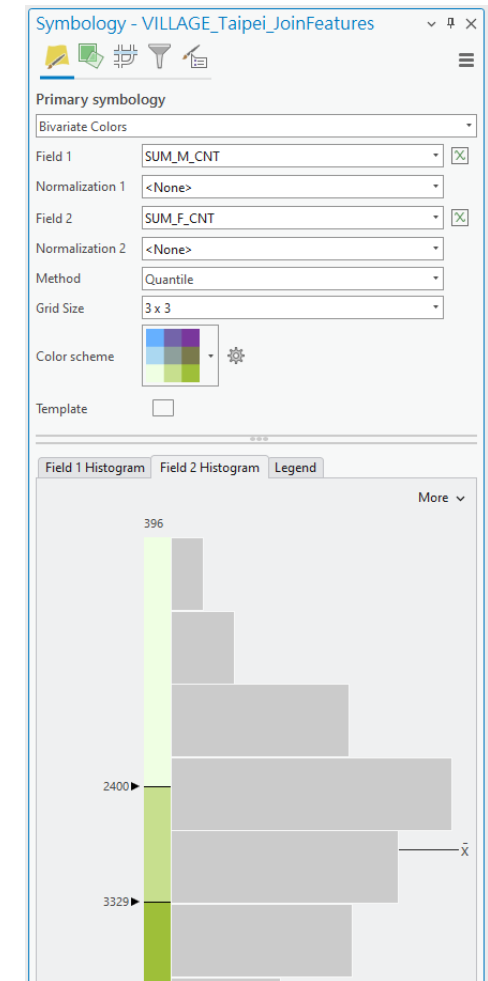
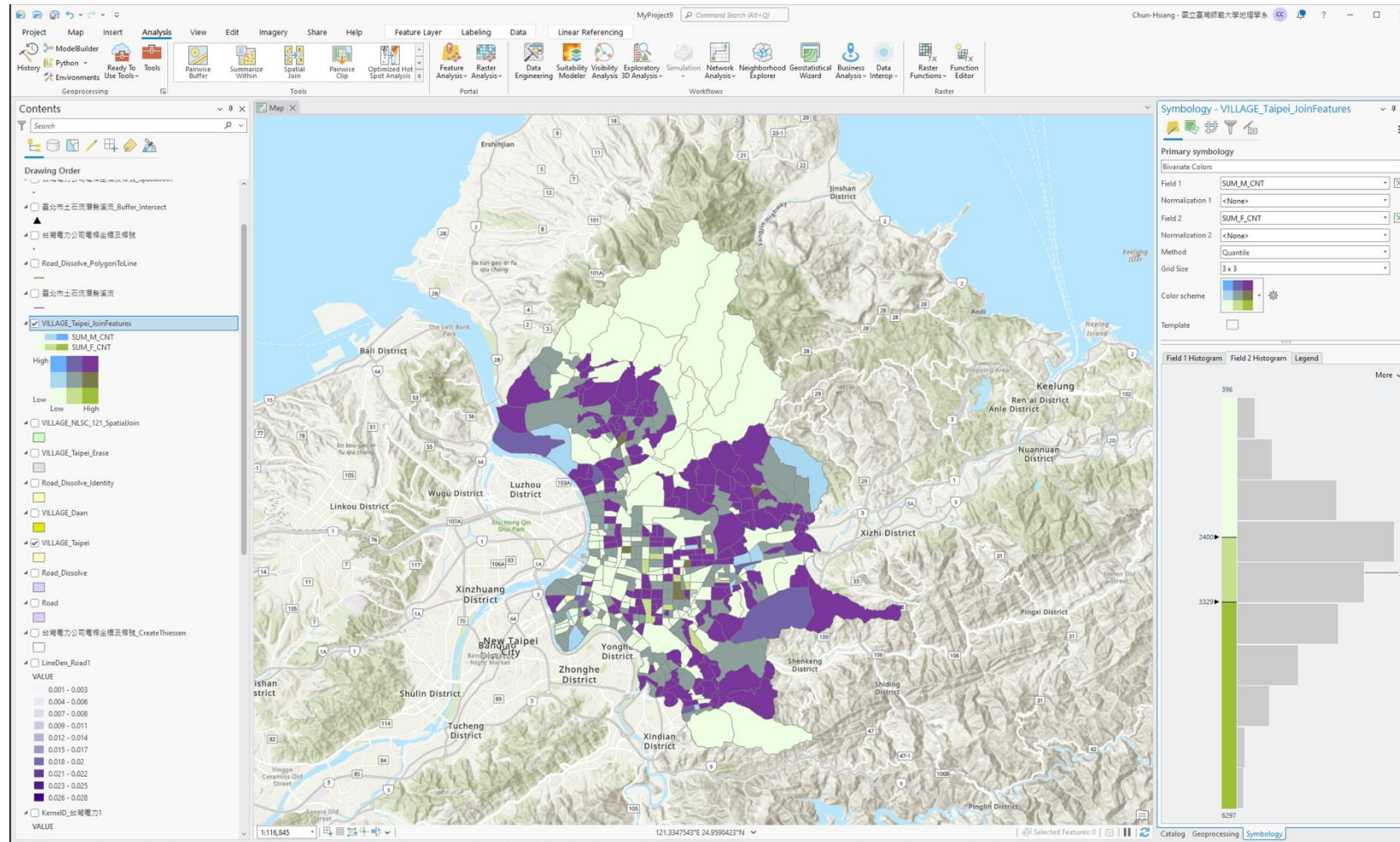
Interval size: 1000

Classes: 13

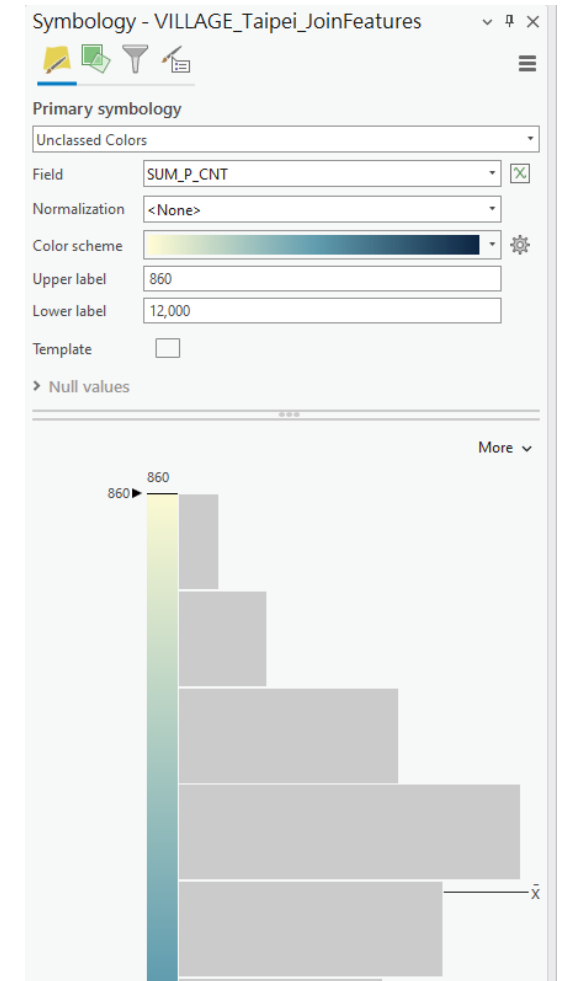
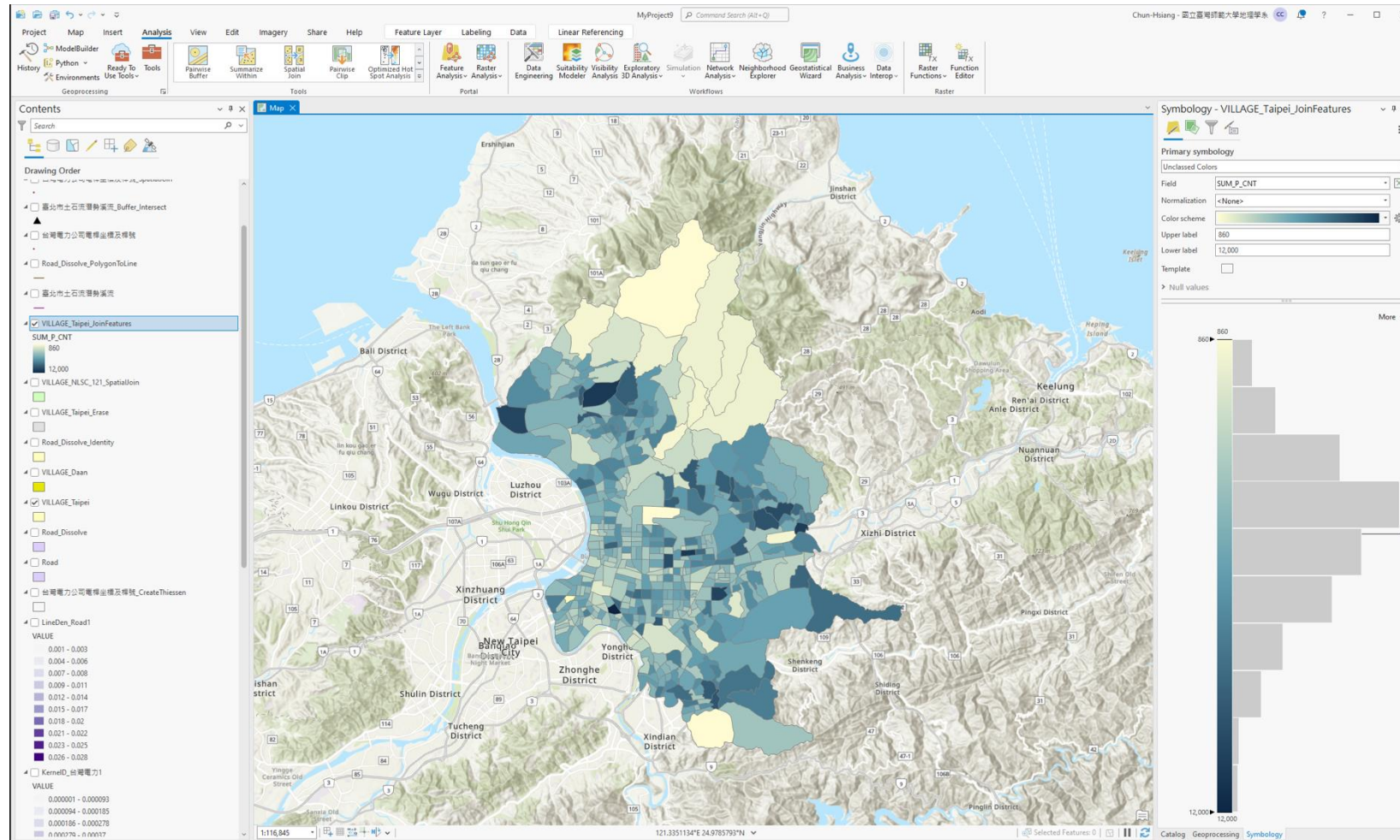
Color scheme: [Color gradient]

Symbol	Upper value	Label
[Lightest Yellow]	≤ 1000	861.000000 - 1000.000000
[Light Yellow]	≤ 2000	1000.000001 - 2000.000000
[Yellow-Green]	≤ 3000	2000.000001 - 3000.000000
[Light Green]	≤ 4000	3000.000001 - 4000.000000
[Green]	≤ 5000	4000.000001 - 5000.000000
[Medium Green]	≤ 6000	5000.000001 - 6000.000000
[Dark Green]	≤ 7000	6000.000001 - 7000.000000
[Teal]	≤ 8000	7000.000001 - 8000.000000
[Dark Teal]	≤ 9000	8000.000001 - 9000.000000
[Dark Blue-Teal]	≤ 10000	9000.000001 - 10000.000000
[Dark Blue]	≤ 11000	10000.000001 - 11000.000000
[Very Dark Blue]	≤ 12000	11000.000001 - 12000.000000
[Darkest Blue]	≤ 13000	12000.000001 - 13000.000000

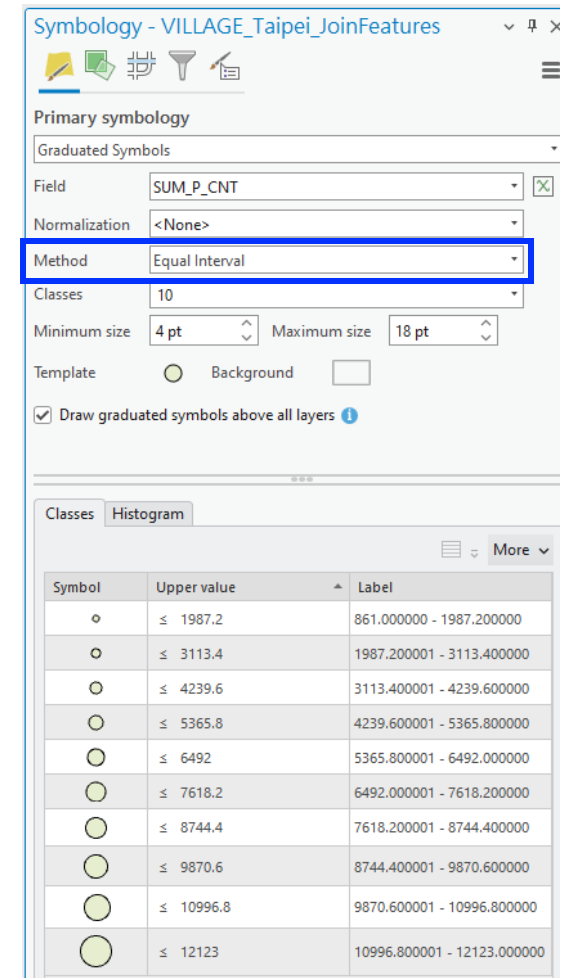
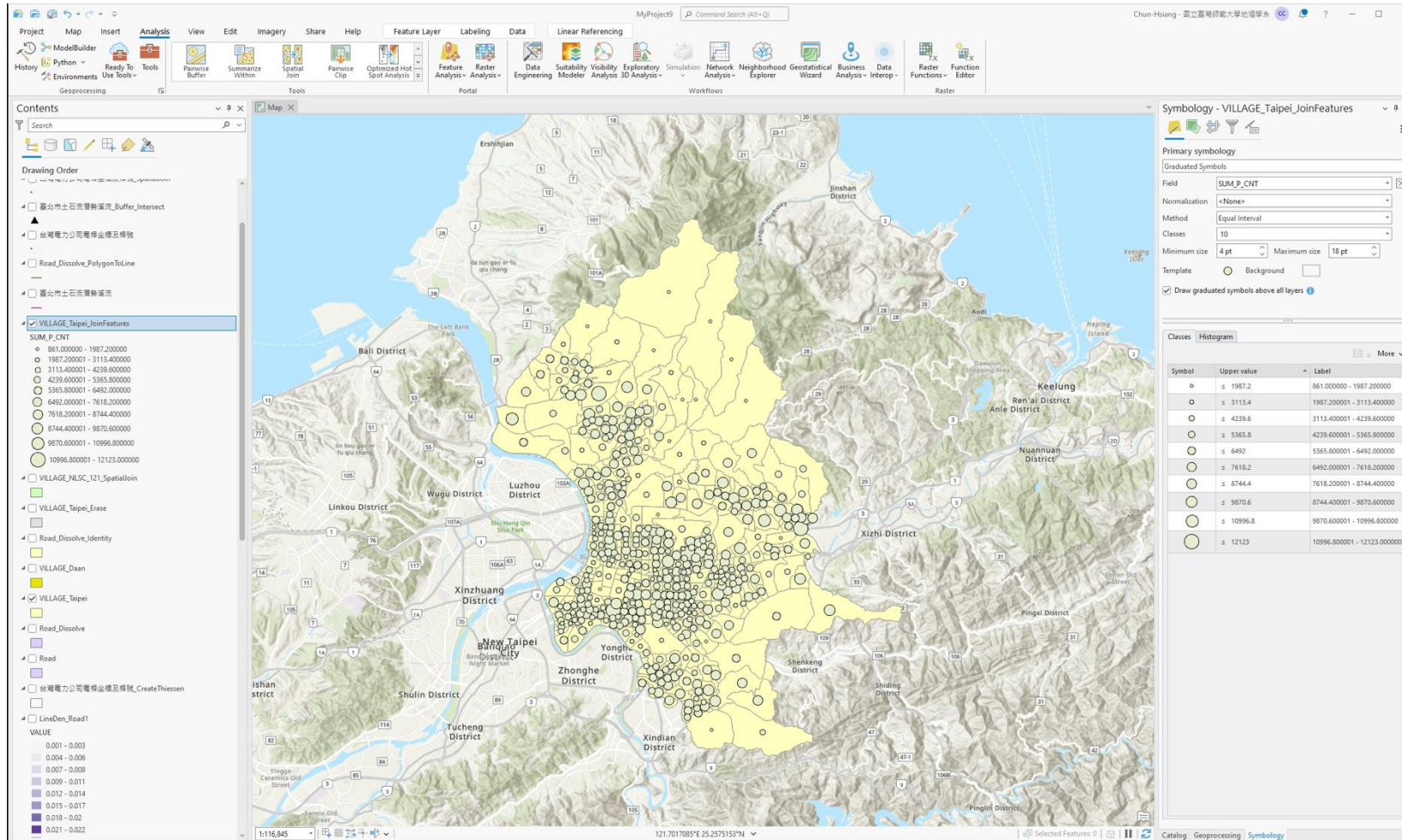
Symbology :: Bivariate Colors with P_CNT



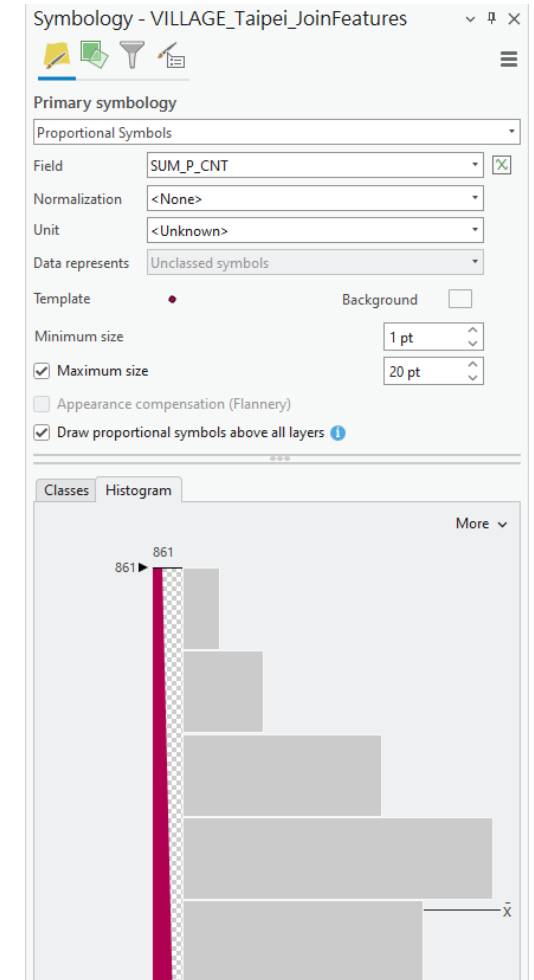
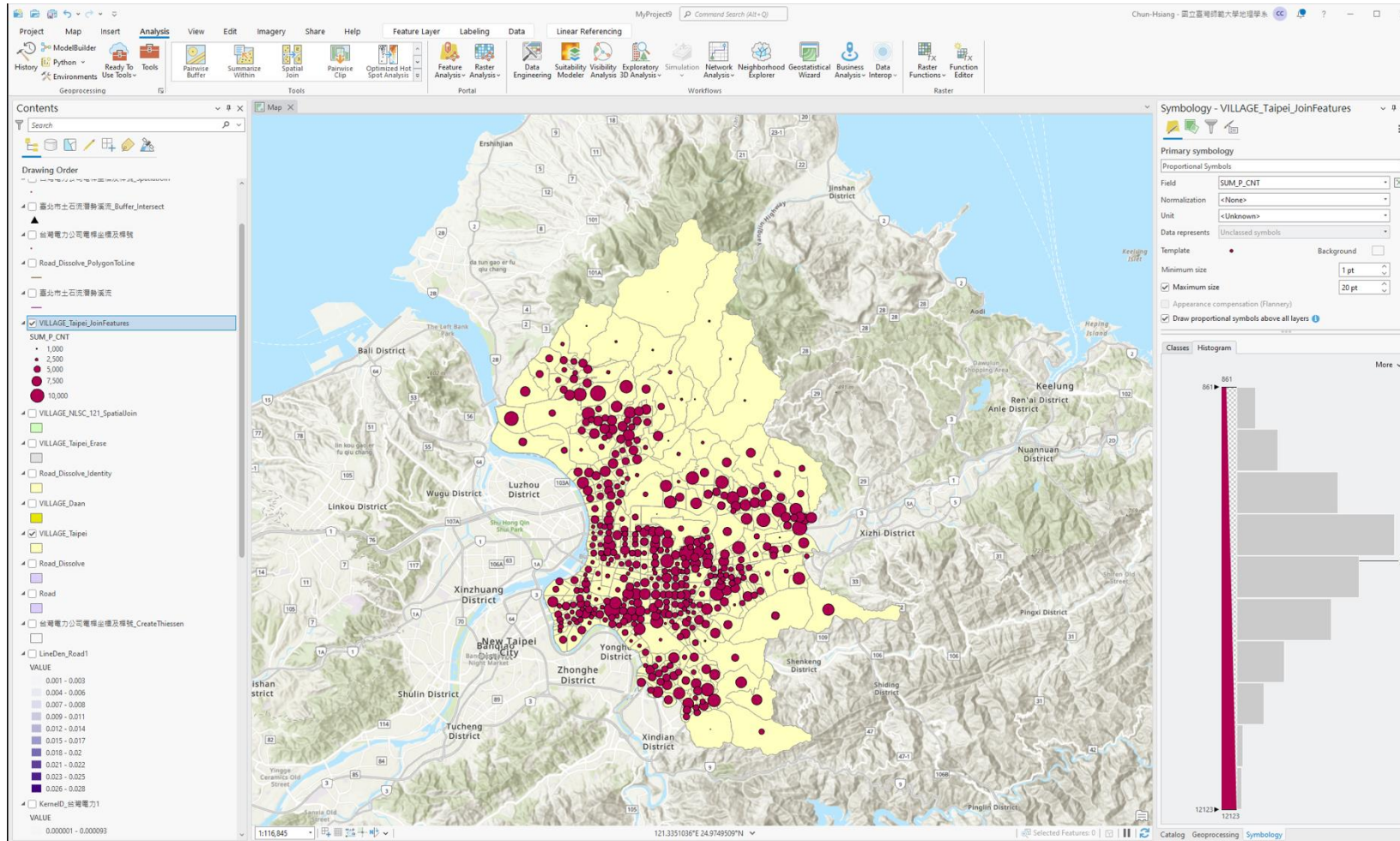
Symbology :: Unclassed Colors with P_CNT



Symbology :: Graduated Symbols for Polygon with P_CNT



Symbology :: Proportional Symbols for Polygon with P_CNT



Symbology :: Dot Density for Polygon (M/F)

Symbology - VILLAGE_Taipei_JoinFeatures

Primary symbology: Dot Density

Fields	Symbol	Label
SUM_M_CNT	•	SUM_M_CNT
SUM_F_CNT	•	SUM_F_CNT

Dot Size: 2 pt
Dot Value: 600
 Auto adjust dot value to maintain density
Background:
Labels: Symbol: Dot, Unit: 1 Dot = 50
Dot Placement: Seed Value: 26529

Symbology :: Bar Chart for Polygon (M/F)

The screenshot displays the ArcGIS Desktop interface with a map showing a bar chart symbology applied to a polygon layer. The map shows a dense network of red and green bars representing data for two fields: SUM_M_CNT and SUM_F_CNT. The interface includes the Contents pane, Symbology pane, and a detailed Symbology - VILLAGE_Taipei_JoinFeatures panel.

Symbology - VILLAGE_Taipei_JoinFeatures

Primary symbology: Charts

Chart type: Bar Chart

Fields	Symbol	Label
SUM_M_CNT	[Red]	SUM_M_CNT
SUM_F_CNT	[Green]	SUM_F_CNT

Normalization: <None>

Background: [None]

Appearance

- Bar width: 6 pt
- Maximum bar length: 48 pt
- Draw chart symbols above all layers
- Show legend
- Legend outline color: [Black]
- Legend leaderline color: [Black]
- Bar spacing: 0 pt
- Show axes

Leader lines: [None]

Display options: [None]

Symbology :: Pie Chart for Polygon (M/F)

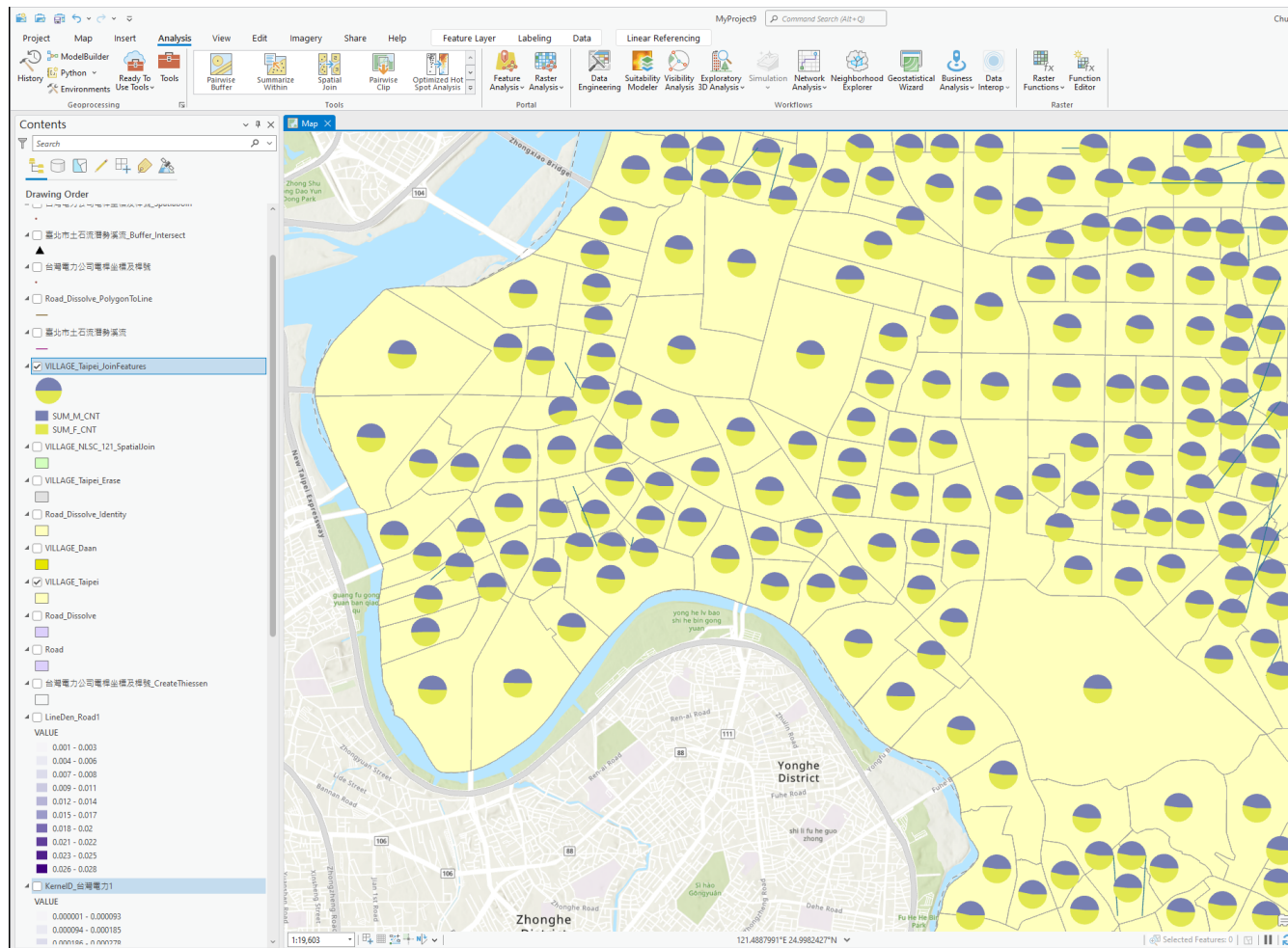
The Symbology pane configuration is as follows:

Fields	Symbol	Label
SUM_M_CNT	Blue	SUM_M_CNT
SUM_F_CNT	Yellow	SUM_F_CNT

Additional settings in the Symbology pane include:

- Chart type: Pie Chart
- Background: (empty)
- Appearance: Size type: Fixed size, Size: 32 pt, Show chart outline:
- Leader lines: Draw chart symbols above all layers
- Display options: (expanded)

Symbology :: Pie Chart for Polygon (M/F)



Symbology - VILLAGE_Taipei_JoinFeatures

Primary symbology

Charts

Chart type: Pie Chart

Fields	Symbol	Label
SUM_M_CNT		SUM_M_CNT
SUM_F_CNT		SUM_F_CNT

Background

Appearance

Size type: Fixed size

Size: 32 pt

Show chart outline

Outline symbol

Draw chart symbols above all layers

Leader lines

Display options

Symbology :: Stacked Chart for Polygon (M/F)

The screenshot displays the ArcGIS Pro interface with a map of Taipei, Taiwan. The map shows a network of roads and buildings, with a central area highlighted in yellow and purple. The symbology panel on the right is titled 'Symbology - VILLAGE_Taipei_JoinFeatures' and shows the 'Stacked Chart' configuration. The 'Primary symbology' is set to 'Charts', and the 'Chart type' is 'Stacked Chart'. The 'Fields' table shows the following configuration:

Fields	Symbol	Label
SUM_M_CNT	Green	SUM_M_CNT
SUM_F_CNT	Purple	SUM_F_CNT

The 'Normalization' is set to '<None>', the 'Background' is white, and the 'Appearance' is set to 'Fixed length' with a length of 32 pt and a width of 8 pt. The 'Draw chart symbols above all layers' checkbox is checked, and the 'Show chart outline' checkbox is unchecked.

Symbology :: Stacked Chart for Polygon (M/F)

The screenshot displays the ArcGIS Pro interface with a map of the Yonghe District in Taipei. The map features a yellow background with numerous small, stacked bar charts overlaid on the polygons. The symbology pane on the right is titled "Symbology - VILLAGE_Taipei_JoinFeatures" and shows the following configuration:

- Primary symbology:** Charts
- Chart type:** Stacked Chart
- Fields:** A table with three columns: Fields, Symbol, and Label.

Fields	Symbol	Label
SUM_M_CNT	Green	SUM_M_CNT
SUM_F_CNT	Purple	SUM_F_CNT

Additional settings in the symbology pane include:

- Normalization:** <None>
- Background:** White
- Appearance:** Length type: Fixed length; Length: 32 pt; Width: 8 pt.
- Draw chart symbols above all layers
- Show chart outline
- Outline symbol:** None
- Leader lines:** None
- Display options:** None

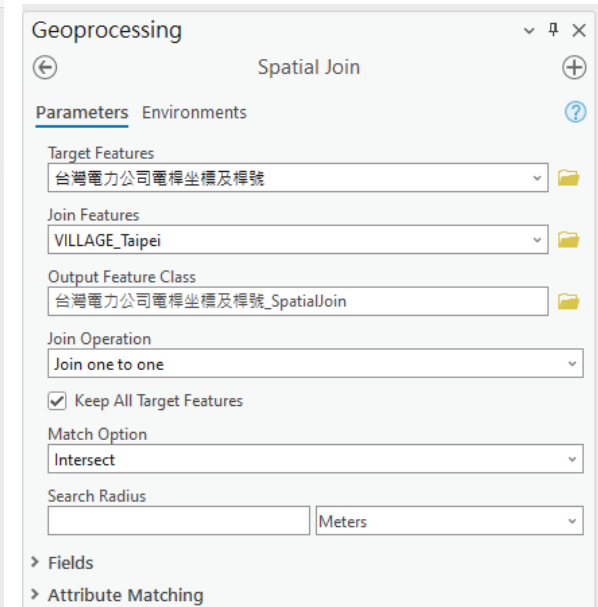
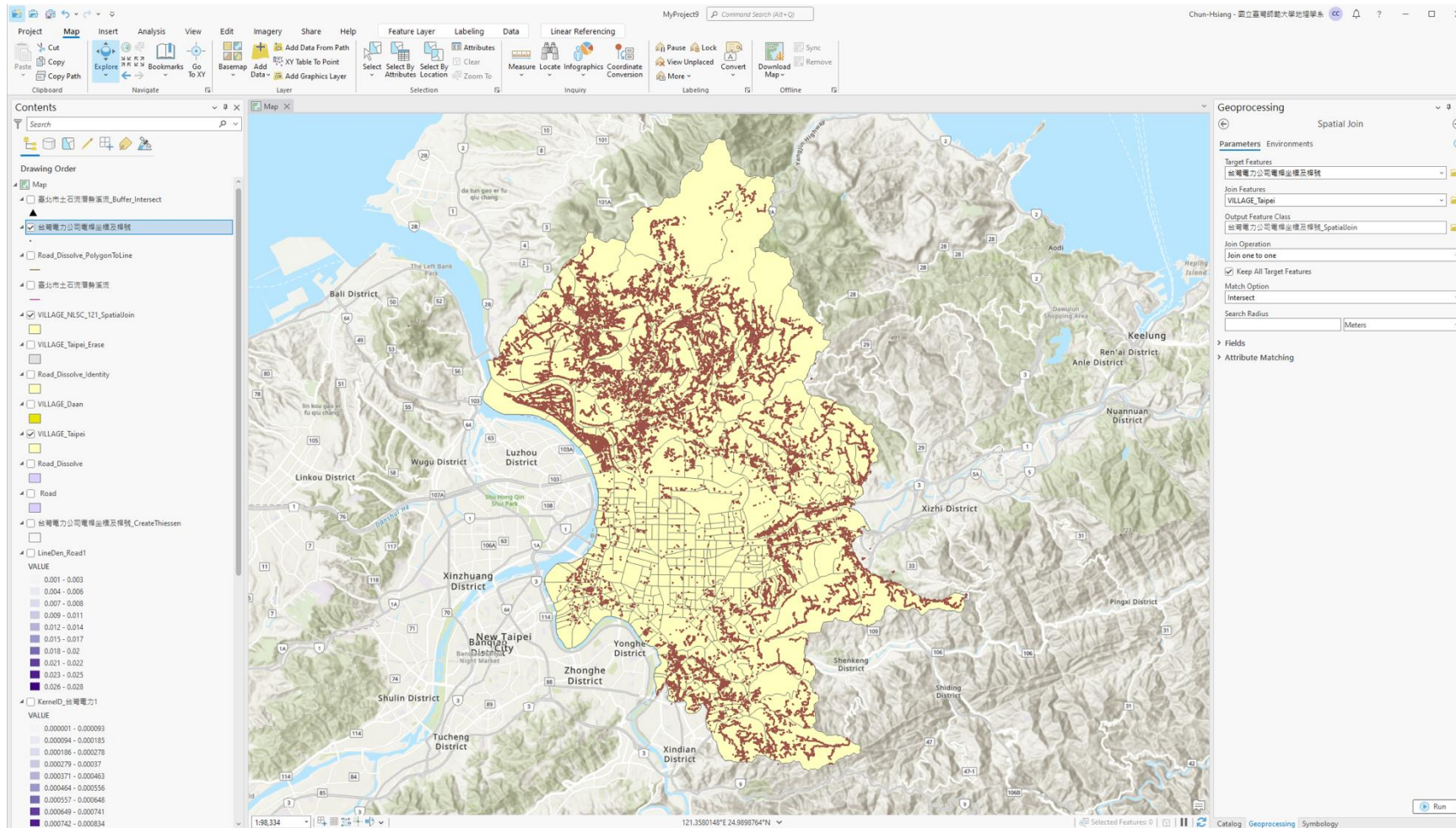
Symbology :: Point

Feature to Point/ Single Symbol/ Unique Values/ Graduated Colors/ Bivariate Colors/ Unclassed Colors/ Proportional Symbols/ Graduated Symbols/ Dot Density

Procedure for Aggregated Features

- 1) **Spatial Join** for Adding Village into Each Ups
- 2) **Spatial Join** for Counting UPs of Each Village
- 3) **Dissolve** the Spatial Joined UP Layer into Village Resolution
- 4) **Feature To Point** for Converting Dissolved and Spatial Joined UP Layer to Single Point
- 5) **Symbology :: Single Symbols :: Types of Symbols**
- 6) **Symbology :: Single Symbols :: Symbols and Properties**
- 7) **Symbology :: Single Symbol**
- 8) **Symbology :: Unique Values** by District
- 9) **Symbology :: Graduated Colors** by UP_CNT
- 10) **Symbology :: Unclassed Colors** with UP_CNT
- 11) **Symbology :: Proportional Symbols** with UP_CNT
- 12) **Symbology :: Dot Density** with UP_CNT

Spatial Join for Adding Village into Each Ups



Spatial Join for Counting UPs of Each Village

The screenshot shows the ArcGIS Desktop interface with a Spatial Join tool applied. The map displays utility poles (red dots) overlaid on village boundaries (yellow polygons). The Geoprocessing pane on the right shows the Spatial Join tool parameters. The bottom table displays the resulting data with columns for object ID, join count, target FID, county, type, ID, coordinates, and village code.

OBJECTID	Shape	Join_Count	TARGET_FID	County	type_tick	ID	TWD_97_X	TWD_97_Y	VILLCODE	COUNTYNAME	TOWNNAME	VILLNAME	VILLENG	COUNTYID	COUN
1	Point	1	0	Taipei	cement	B6843HE98	306028.75999	2771772.2409	6300010014	臺北市	松山區	東興里	Dongshi VII.	A	63000
2	Point	1	1	Taipei	cement	B6846AC72	305304.61066	2773014.06273	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
3	Point	1	2	Taipei	cement	B6846AC82	305319.61011	2773014.08747	6300010010	臺北市	松山區	橋中里	Jingzhong VII.	A	63000
4	Point	1	3	Taipei	cement	B6846BB18	305341.33147	2772980.14796	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
5	Point	1	4	Taipei	cement	B6846BB28	305346.44977	2772975.78728	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
6	Point	1	5	Taipei	wood	B6846BB55	305386.40607	2772950.69576	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
7	Point	1	6	Taipei	wood	B6846BB82	305427.12036	2772922.5023	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
8	Point	1	7	Taipei	cement	B6846CA7615	305500.71207	2772859.6829	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
9	Point	1	8	Taipei	cement	B6846CB20	305455.50966	2772898.23407	6300010017	臺北市	松山區	民權里	Minfu VII.	A	63000
10	Point	1	9	Taipei	cement	B6943AE37	306057.46636	2771771.25803	6300010014	臺北市	松山區	東興里	Dongshi VII.	A	63000
11	Point	1	10	Taipei	cement	B7046GC09	307429.78475	2772091.58486	6300010020	臺北市	松山區	體操里	Pengcheng VII.	A	63000
12	Point	1	11	Taipei	cement	B7046EE36	307257.51117	2773261.76385	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
13	Point	1	12	Taipei	cement	B70478E02	306915.2968	2773709.88833	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
14	Point	1	13	Taipei	cement	B7047EA12	307024.78105	2773316.36235	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
15	Point	1	14	Taipei	cement	B6946BA47	306179.94505	2773868.05704	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
16	Point	1	15	Taipei	cement	B6946BA96	306233.4763	2773862.95273	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
17	Point	1	16	Taipei	cement	B6946BA90	306220.47836	2773795.55768	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
18	Point	1	17	Taipei	cement	B7047FC28	307366.89322	2773577.14784	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
19	Point	1	18	Taipei	cement	B7047FD44	307371.74513	2773630.90303	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000
20	Point	1	19	Taipei	cement	B7047FD536	307372.66912	2773649.99104	6300010002	臺北市	松山區	莊敬里	Zhuangjing VII.	A	63000

Dissolve the Spatial Joined UP Layer into Village Resolution

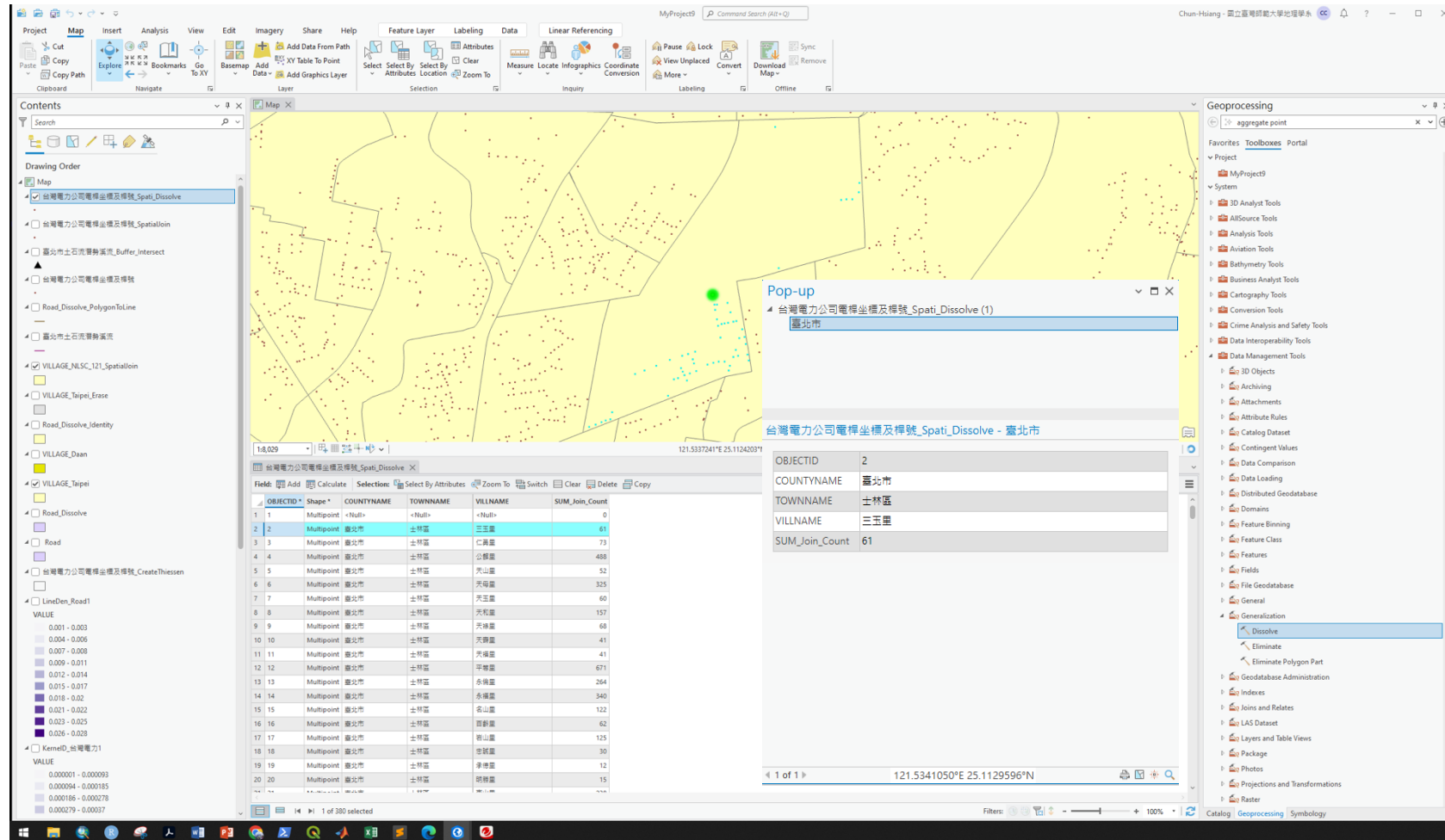
The screenshot shows the ArcGIS Desktop interface. The main map displays a spatially joined layer (red) overlaid on a village layer (yellow). The ribbon at the top includes various toolbars. The contents pane on the left shows the layer stack. At the bottom, a data table is visible with the following columns and data:

OBJECTID	Shape	Join_Count	TARGET_FID	County	type	tick	ID	TWD_97_X	TWD_97_Y	VILLCODE	COUNTYNAME	TOWNSHIP	VILLNAME	VILLENG	COUNTYID	COUN
1	Point	1	0	Taipei	cement		B6843HE98	306028.75999	2771772.2409	6300010014	臺北市	松山區	樂善里	Dongshi Vil.	A	63000
2	Point	1	1	Taipei	cement		B6846AC72	305304.61066	2773014.06273	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
3	Point	1	2	Taipei	cement		B6846AC82	30519.6101	2773014.08747	6300010010	臺北市	松山區	精忠里	Jingzhong Vil.	A	63000
4	Point	1	3	Taipei	cement		B6846EB18	305341.33147	2772980.14796	6300010010	臺北市	松山區	民權里	Minfu Vil.	A	63000
5	Point	1	4	Taipei	cement		B6846EB28	305346.44977	2772975.78728	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
6	Point	1	5	Taipei	wood		B6846EB55	305386.40607	2772950.69576	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
7	Point	1	6	Taipei	wood		B6846EB92	305427.12036	2772922.5023	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
8	Point	1	7	Taipei	cement		B6846CA7615	305500.71207	2772859.6829	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
9	Point	1	8	Taipei	cement		B6846CB00	305455.50986	2772898.23407	6300010017	臺北市	松山區	民權里	Minfu Vil.	A	63000
10	Point	1	9	Taipei	cement		B6943AE37	306057.46636	2771771.25903	6300010014	臺北市	松山區	樂善里	Dongshi Vil.	A	63000
11	Point	1	10	Taipei	cement		B7044GC09	307429.78475	2772091.58486	6300010020	臺北市	松山區	善德里	Pengcheng Vil.	A	63000
12	Point	1	11	Taipei	cement		B7044EE36	307257.51117	2773261.76385	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
13	Point	1	12	Taipei	cement		B7047BE02	306935.2968	2773709.88823	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
14	Point	1	13	Taipei	cement		B7047EA12	307247.78105	2773316.36235	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
15	Point	1	14	Taipei	cement		B6948BA47	306179.84505	2773868.05704	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
16	Point	1	15	Taipei	cement		B6948BA96	306223.4783	2773862.95273	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
17	Point	1	16	Taipei	cement		B6948BA90	306220.47836	2773795.55768	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
18	Point	1	17	Taipei	cement		B7047FC38	307366.89322	2773571.14784	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
19	Point	1	18	Taipei	cement		B7047FD44	307371.74513	2773630.90303	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000
20	Point	1	19	Taipei	cement		B7047FD4536	307372.66912	2773649.99104	6300010002	臺北市	松山區	莊敬里	Zhuangjing Vil.	A	63000

The screenshot shows the Geoprocessing Dissolve tool interface. The tool is configured with the following parameters:

- Input Features:** 台灣電力公司電桿坐標及桿號_SpatialJoin
- Output Feature Class:** 台灣電力公司電桿坐標及桿號_Spati_Dissolve
- Dissolve Fields:** COUNTYNAME, TOWNSHIPNAME, VILLNAME
- Statistics Fields:** Join_Count (Sum)
- Create multipart features
- Unsplit lines

Dissolve the Spatial Joined UP Layer into Village Resolution



Every row is Multipoint!!!

So, our target is to merge all points within the same village into a single point.

OBJECTID	Shape	COUNTYNAME	TOWNSHIPNAME	VILLAGE	SUM_Join_Count
1	Multipoint	<Null>	<Null>	<Null>	0
2	Multipoint	臺北市	士林區	三玉里	61
3	Multipoint	臺北市	士林區	仁勇里	73
4	Multipoint	臺北市	士林區	公都里	488
5	Multipoint	臺北市	士林區	天山里	52
6	Multipoint	臺北市	士林區	天母里	325
7	Multipoint	臺北市	士林區	天玉里	60
8	Multipoint	臺北市	士林區	天和里	157
9	Multipoint	臺北市	士林區	天祥里	68
10	Multipoint	臺北市	士林區	天壽里	41
11	Multipoint	臺北市	士林區	天福里	41
12	Multipoint	臺北市	士林區	平等里	671
13	Multipoint	臺北市	士林區	永福里	264
14	Multipoint	臺北市	士林區	永福里	340
15	Multipoint	臺北市	士林區	名山里	122
16	Multipoint	臺北市	士林區	目齡里	62
17	Multipoint	臺北市	士林區	碧山里	125
18	Multipoint	臺北市	士林區	宇隆里	30
19	Multipoint	臺北市	士林區	宇德里	12
20	Multipoint	臺北市	士林區	明勝里	15

Feature To Point for Converting Dissolved and Spatial Joined UP Layer to Single Point

The screenshot displays the ArcGIS Desktop environment. The main map area shows a yellow background with numerous small red and green points. The 'Contents' pane on the left lists several layers, including '台灣電力公司電桿坐標及桿號_Spati_Dissolve'. The 'Geoprocessing' pane on the right shows the 'Feature To Point' tool selected. Below the map, a data table is visible with the following columns: OBJECTID, Shape, COUNTYNAME, TOWNSHIPNAME, VILLAGE, and SUM_Join_Count. The table contains 20 rows of data.

OBJECTID	Shape	COUNTYNAME	TOWNSHIPNAME	VILLAGE	SUM_Join_Count
1	Multipoint	<Null>	<Null>	<Null>	0
2	Multipoint	臺北市	士林區	三玉里	61
3	Multipoint	臺北市	士林區	仁壽里	73
4	Multipoint	臺北市	士林區	公館里	488
5	Multipoint	臺北市	士林區	天山里	52
6	Multipoint	臺北市	士林區	天母里	325
7	Multipoint	臺北市	士林區	天玉里	60
8	Multipoint	臺北市	士林區	天和里	157
9	Multipoint	臺北市	士林區	天德里	68
10	Multipoint	臺北市	士林區	天壽里	41
11	Multipoint	臺北市	士林區	天德里	41
12	Multipoint	臺北市	士林區	平德里	671
13	Multipoint	臺北市	士林區	永德里	264
14	Multipoint	臺北市	士林區	永德里	340
15	Multipoint	臺北市	士林區	名山里	122
16	Multipoint	臺北市	士林區	百壽里	62
17	Multipoint	臺北市	士林區	福山里	125
18	Multipoint	臺北市	士林區	忠誠里	30
19	Multipoint	臺北市	士林區	淨德里	12
20	Multipoint	臺北市	士林區	碧德里	15

Feature To Point for Converting Dissolved and Spatial Joined UP Layer to Single Point

Geoprocessing

Feature To Point

Parameters Environments

Input Features
台灣電力公司電桿坐標及桿號_Spati_Dissolve

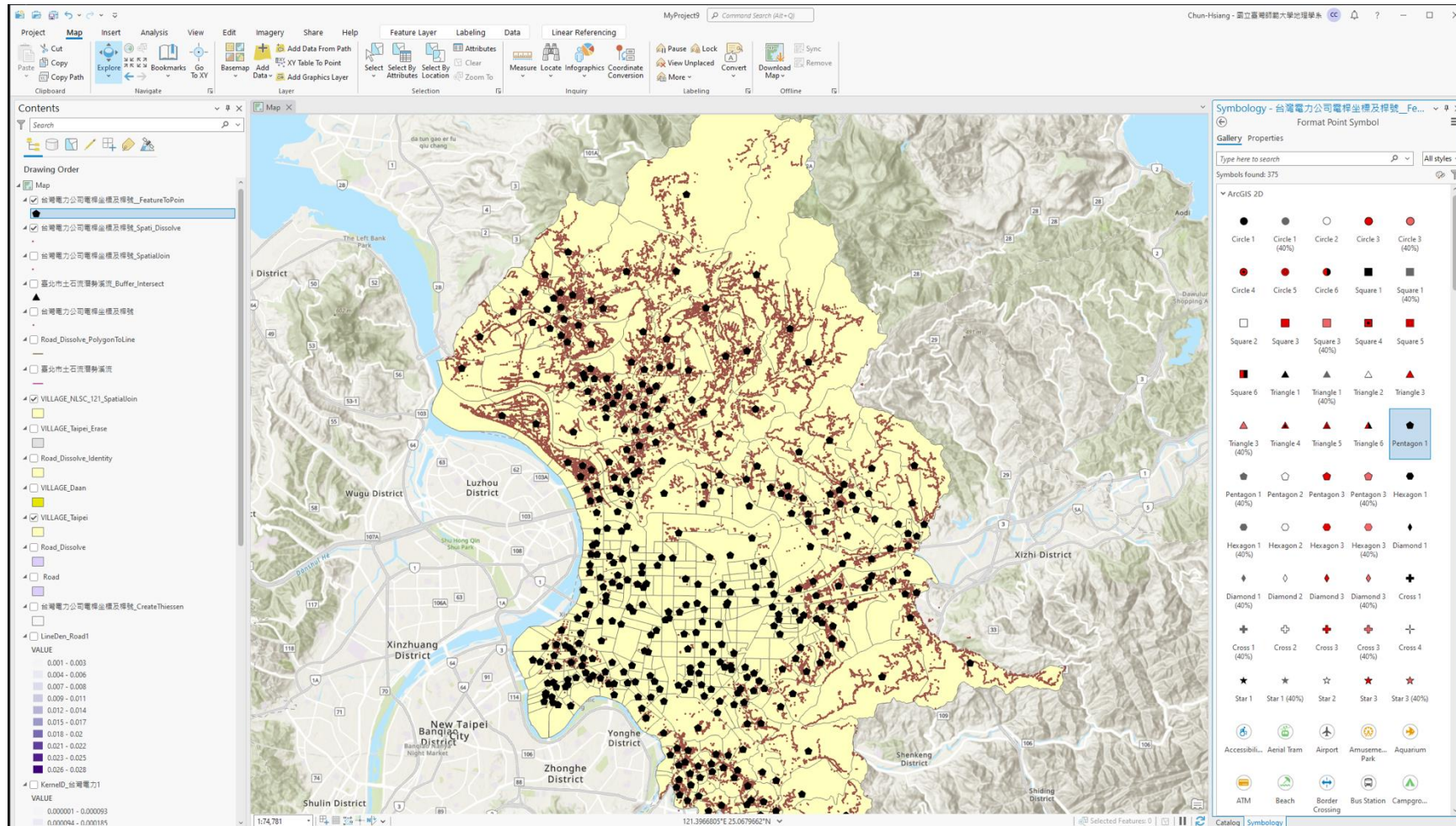
Output Feature Class
台灣電力公司電桿坐標及桿號_FeatureToPoint

Inside

Run

OBJECTID	Shape	COUNTYNAME	TOWNNAME	VILLNAME	SUM_Join_Count
1	Multipoint	<Null>	<Null>	<Null>	0
2	Multipoint	臺北市	士林區	三芝里	61
3	Multipoint	臺北市	士林區	仁壽里	73
4	Multipoint	臺北市	士林區	公標里	488
5	Multipoint	臺北市	士林區	天山里	52
6	Multipoint	臺北市	士林區	天海里	325
7	Multipoint	臺北市	士林區	天玉里	60
8	Multipoint	臺北市	士林區	天和里	157
9	Multipoint	臺北市	士林區	天祥里	68
10	Multipoint	臺北市	士林區	天壽里	41
11	Multipoint	臺北市	士林區	天福里	41
12	Multipoint	臺北市	士林區	天福里	671
13	Multipoint	臺北市	士林區	天福里	264
14	Multipoint	臺北市	士林區	天福里	340
15	Multipoint	臺北市	士林區	天福里	122
16	Multipoint	臺北市	士林區	天福里	62
17	Multipoint	臺北市	士林區	天福里	125
18	Multipoint	臺北市	士林區	天福里	30
19	Multipoint	臺北市	士林區	天福里	12
20	Multipoint	臺北市	士林區	天福里	15

Symbology :: Single Symbols :: Types of Symbols



Symbology :: Single Symbols :: Symbols and Properties

The screenshot illustrates the Symbology pane in ArcGIS Desktop, specifically the 'Format Point Symbol' dialog. The map shows a network of power lines and points. The Symbology pane is open, showing the 'Format Point Symbol' dialog. The 'Appearance' section is expanded, showing options for shape fill, color, outline, size, and halo. A 'Polygon symbols' dialog is also visible, showing a grid of symbols. The 'Contents' pane on the left shows the layer structure, including '台灣電力公司電桿坐標及桿號_SpatialJoin'.

Symbology - 台灣電力公司電桿坐標及桿號_Fe...
Format Point Symbol

Appearance

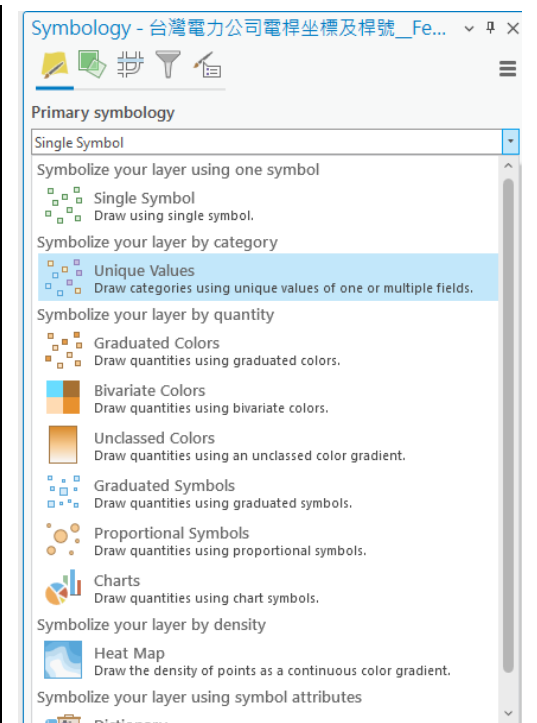
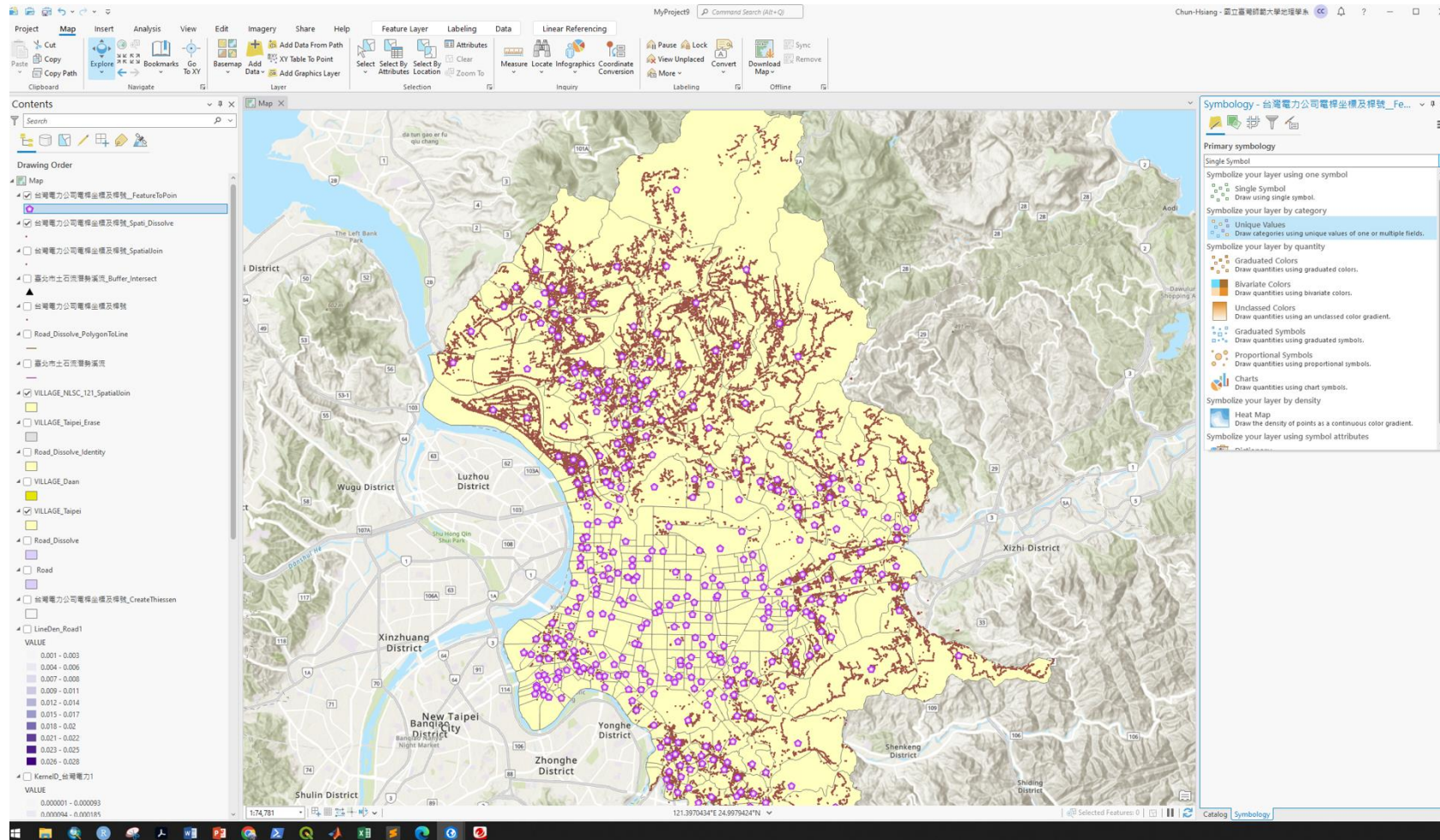
- Shape fill symbol
- Colors
- Outline color
- Outline width
- Size
- Enable scale-based sizing
- Angle
- Angle alignment

Halo

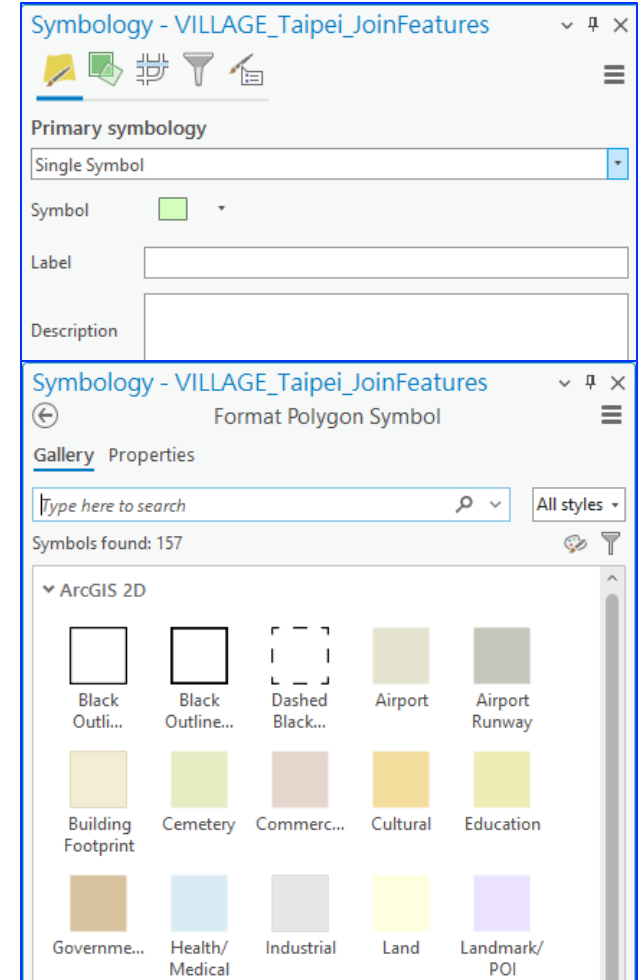
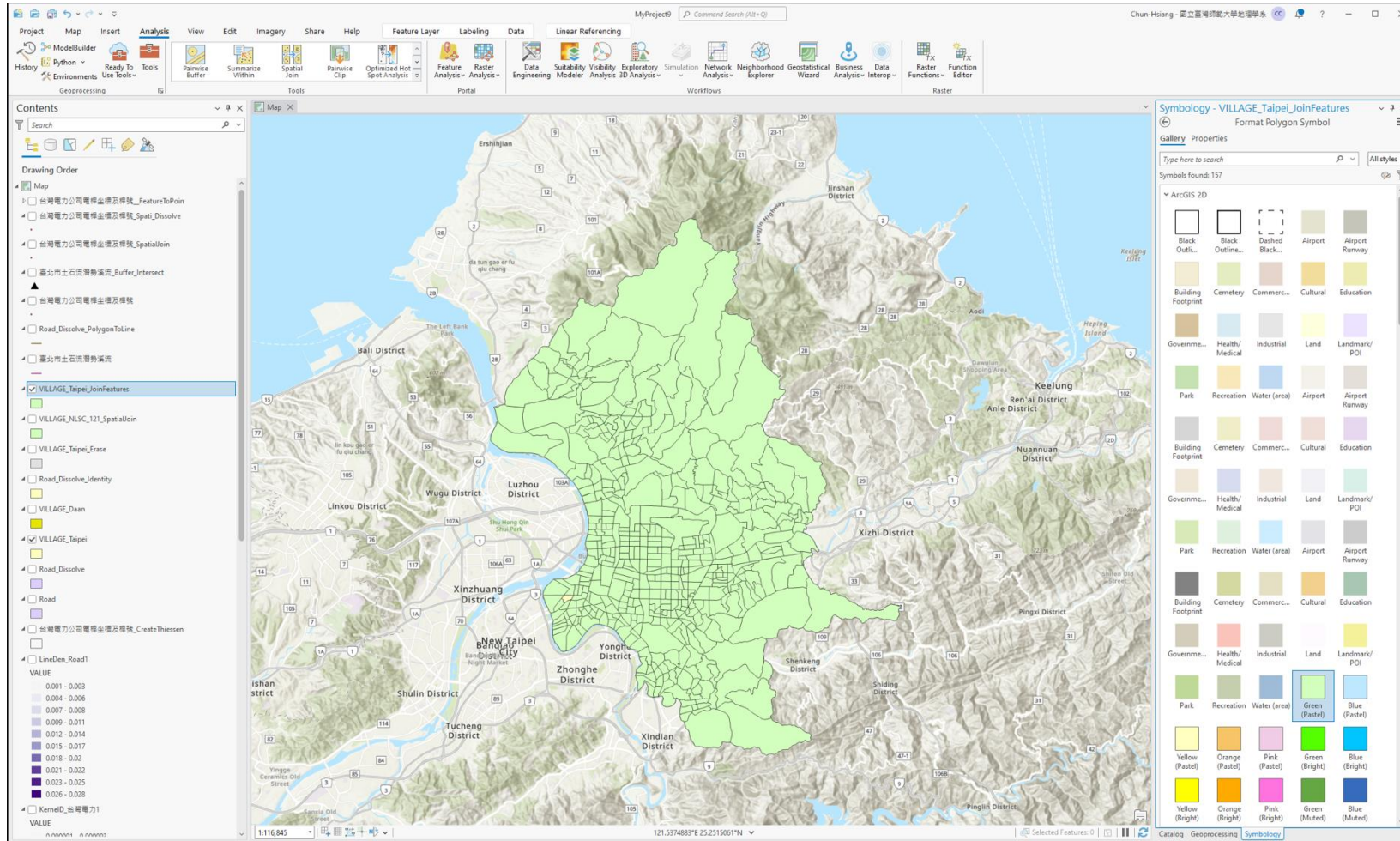
Polygon symbols

More polygon symbols...
Format polygon symbol...
Display

Symbology :: Single Symbol



Symbology :: Single Symbol by District



Symbology :: Unique Values by District

The screenshot displays the ArcGIS Desktop interface. The main map shows a topographic view of New Taipei City, Taiwan, with various districts color-coded according to their town names. The Symbology pane on the right is open, showing the 'Symbology - VILLAGE_NLSC_121_SpatialJoin' window. The 'Primary symbology' is set to 'Unique Values' for the 'TOWNNAME' field. Below this, a table lists the 13 districts and their corresponding symbols.

Symbol	Value	Label
○	<Null>	<Null>
○	中山區	中山區
○	中正區	中正區
○	信義區	信義區
○	內湖區	內湖區
○	北投區	北投區
○	南港區	南港區
○	士林區	士林區
○	大同區	大同區
○	大安區	大安區
○	文山區	文山區
○	松山區	松山區
○	萬華區	萬華區
○	<all other value...>	<all other value...>

Symbology :: Graduated Colors by UP_CNT

The screenshot displays the ArcGIS Desktop interface. The main map shows a geographic area with a graduated color symbology applied to the 'UP_CNT' field. The symbology is set to 'Graduated Colors' with 10 classes, using the 'Natural Breaks (Jenks)' method. The color scheme transitions from light yellow for the lowest values to dark blue for the highest values.

Symbology - VILLAGE_NLSC_121_SpatialJoin

Primary symbology: Graduated Colors

Field: Join_Count

Normalization: <None>

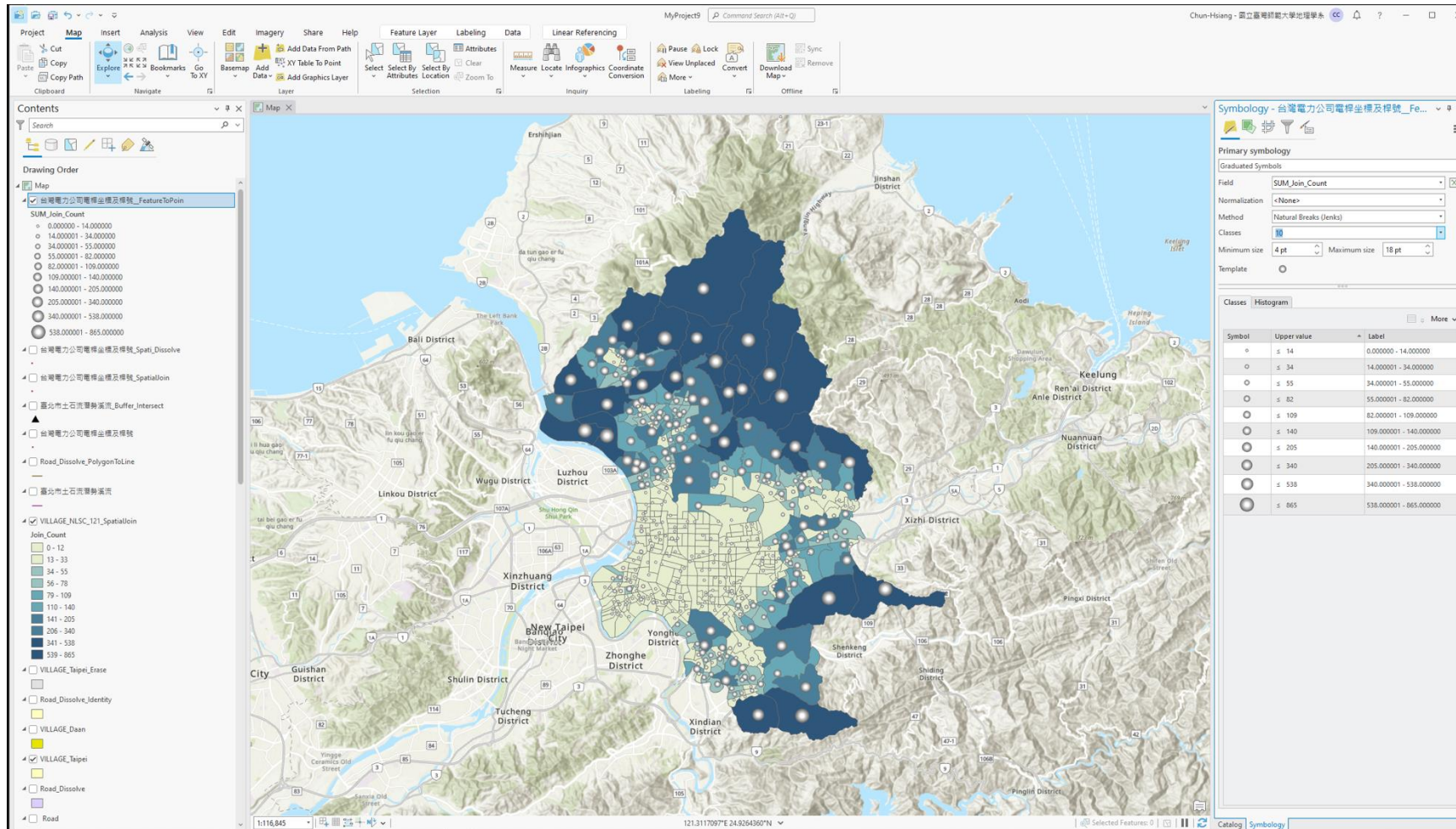
Method: Natural Breaks (Jenks)

Classes: 10

Color scheme: [Color gradient]

Symbol	Upper value	Label
[Light Yellow]	≤ 12	0 - 12
[Light Green]	≤ 33	13 - 33
[Light Green]	≤ 55	34 - 55
[Medium Green]	≤ 78	56 - 78
[Dark Green]	≤ 109	79 - 109
[Teal]	≤ 140	110 - 140
[Dark Teal]	≤ 205	141 - 205
[Dark Blue-Teal]	≤ 340	206 - 340
[Dark Blue]	≤ 538	341 - 538
[Darkest Blue]	≤ 865	539 - 865

Symbology :: Graduated Symbols by UP_CNT



Symbology - 台灣電力公司電桿坐標及桿號_Fe...

Primary symbology
 Graduated Symbols

Field: SUM_Join_Count

Normalization: <None>

Method: Natural Breaks (Jenks)

Classes: 10

Minimum size: 4 pt | Maximum size: 18 pt

Template: ○

Classes Histogram

Symbol	Upper value	Label
○	≤ 14	0.000000 - 14.000000
○	≤ 34	14.000001 - 34.000000
○	≤ 55	34.000001 - 55.000000
○	≤ 82	55.000001 - 82.000000
○	≤ 109	82.000001 - 109.000000
○	≤ 140	109.000001 - 140.000000
○	≤ 205	140.000001 - 205.000000
○	≤ 340	205.000001 - 340.000000
○	≤ 538	340.000001 - 538.000000
○	≤ 865	538.000001 - 865.000000

Symbology :: Unclassed Colors with UP_CNT

The screenshot displays the ArcGIS Desktop interface. The main map shows a geographic area with various districts labeled, including Ershihjian, Jishan District, Keelung, Ren'ai District, Anle District, Nuannuan District, Xizhi District, Pingxi District, Xindian District, Zhonghe District, Yonghe District, Shengkang District, Shiding District, Pingli District, Xinzhuang District, Xinyu District, Shulin District, Tucheng District, Guishan District, and City. The map features a color-coded overlay representing the 'SUM_Join_Count' field, with a legend on the left showing a color scale from light blue (0) to dark blue (0.023-0.025). The Symbology pane on the right is open, showing the 'Symbology - 台灣電力公司電桿坐標及桿號_Fe...' window. The 'Primary symbology' is set to 'Unclassed Colors'. The 'Field' is 'SUM_Join_Count', 'Normalization' is '<None>', and the 'Color scheme' is a blue gradient. The 'Upper label' is '0' and the 'Lower label' is '865'. The 'Template' is set to a solid black circle. Below the Symbology pane, a vertical color bar legend is visible, showing the gradient from light blue at the top (0) to dark blue at the bottom (865).

Symbology :: Proportional Symbols with UP_CNT

The screenshot displays the ArcGIS Desktop interface. The main map shows a geographic area with various districts labeled, including Ershajian, Jinsan District, Keelung, Anle District, Nuamuan District, Xixi District, Luzhou District, Wugu District, Linkou District, Xinzhuang District, New Taipei, Zhonghe District, Shengkeng District, Shiding District, Pingxi District, Xindian District, Shulin District, Tucheng District, Guishan District, and City. The map features a yellow shaded area and numerous brown circular symbols of varying sizes, representing proportional data. The Symbology pane on the right is titled "Symbology - VILLAGE_NLSC_121_SpatialJoin" and shows the following settings:

- Primary symbology: Proportional Symbols
- Field: Join_Count
- Normalization: <percentage of total>
- Unit: <Unknown>
- Data represents: Unclassed symbols
- Template: (None selected)
- Background: (None selected)
- Minimum size: 1 pt
- Maximum size: 40 pt
- Appearance compensation (Flannery): (Checked)
- Draw proportional symbols above all layers: (Checked)

The Symbology pane also includes a histogram showing the distribution of the Join_Count values, with a vertical axis labeled "Join_Count" and a horizontal axis labeled "X". The histogram shows a distribution of values, with a peak at 0 and a tail extending to the right.

Symbology :: Dot Density with UP_CNT

The screenshot displays the ArcGIS Desktop interface. The main map shows a geographic area with a dot density symbology applied to a layer named 'VILLAGE_NLSC_121_SpatialJoin'. The dots are colored based on their density, with a legend on the left showing a color scale from light yellow (low density) to dark purple (high density). The legend is titled 'VILLAGE_NLSC_121_SpatialJoin' and lists 'Join_Count' values from 0 to 0.026. The symbology pane on the right shows the 'Dot Density' primary symbology with a 'Join_Count' field selected, a dot size of 2 pt, and a dot value of 10. The 'Labels' section shows the symbol 'Dot' and a preview of '1 Dot = 10'.

Fields	Symbol	Label
Join_Count	•	Join_Count

Dot Size	Dot Value
2 pt	10

Symbol	Unit	Preview
Dot		1 Dot = 10

Seed Value
23076



The End

Thank you for your attention!

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