

## NEO CANDO Interactive Mapping Guide

NEO CANDO has been equipped with a highly customizable web mapping environment (ArcIMS) for illustrating data geographically. In ArcIMS, the data from NEO CANDO are displayed as thematic maps. In a thematic map, data are classified so that graphical symbols and/or colors represent data ranges. The first section of this document provides an overview to NEO CANDO Interactive Mapping while the second section contains a tutorial, “*How to Generate a Basic Map*,” which illustrates the basics of creating a map. **Reading this document is highly recommended before creating maps in NEO CANDO.**

### Important things to note

- Users can extract an unlimited number of variables from NEO CANDO into the mapping interface, but only ONE variable from NEO CANDO can be displayed in the mapping interface at a time, but the user does have the ability to easily toggle between variables.
- Supported browsers include Internet Explorer 6.0 or newer and Netscape 6.0 or newer. However, not all functionality is available in Netscape.

### Available Features (for details see “*Description of each Function*” in following section)

- Pan/Zoom
- Change classification type (quantile, equal interval, or custom)
- Define the number of classes (2 to 9)
- Change how data are displayed in the thematic map
  - Graduated points vs. Graduated polygons
  - Color schemes
  - Fill type
  - Point shapes and sizes
  - Null values
  - Suppressed values
- Label data values from NEO CANDO dataset
  - Customize labels
- Add reference layers such as neighborhood assets, streets, or census geographies
  - Change how reference layers are symbolized
- Label features from reference layers
  - Customize labels
- Display all data for the selected county or display only the data selected in the initial NEO CANDO interface (exclude feature found under “Customize Outline/Area of Interest”)
- Generate data table
- Create a printer friendly map
- Interactively select and zoom to specific geographic areas
- Use Identify tool to retrieve data values for a geographic area by clicking on map

## Basic definitions

- Classification → grouping data values into categories.
  - Number of Classes → the number of categories to group data into.
  - Equal Interval → an equal number of observations are placed into each class (ex. A dataset that has 20 values and 4 classes will have 5 values placed into each class).
  - Quantile → the size of each class is equal (ex. A dataset that ranges from 0-50 with 5 classes will have data classified into the following categories: 0-10, 10-20, 20-30, 30-40, 40-50).
  - Custom → the user decides the maximum value for each class.
- Mapped NEO CANDO Variable → the NEO CANDO variable that is currently being mapped in the NEO CANDO Interactive Mapping environment.
- Layer or Data Layer → geographic information is displayed on a map as layers; each layer represents a particular type of feature such as roads, schools, census tracts, or city boundaries.
- Graduated Points vs. Graduated Polygons
  - Graduated Points → categories are represented by points in which the size of the point is proportional to the values of the data that point represents (also known as a graduated symbols map).
  - Graduated Polygons → categories are represented by shaded polygons in which the intensity of the shading is proportional to the values of the data that polygon represents (also known as a choropleth map).
- Null Values → values excluded from the classes (i.e. zeros or records with no data).
- Suppressed Values → see NEO CANDO documentation on suppressed values.
- Visible Layer → Layers that are drawn on the map.
- Radio Button → The circle located next to an option/tool. When radio buttons are selected, only one of the options/tool can be used at a time.
- Point, Line, and Polygon
  - Point → a geographic phenomena that can only be represented by an x-y coordinate pair; has no dimension (i.e. an address).
  - Line → a geographic phenomena that is represented by two or more coordinate pairs connected by line segments; only has the dimension of length (i.e. a street).
  - Polygon → a geographic phenomena that is represented by three or more coordinate pairs connected by line segments; has the dimension of length, width, and area (i.e. a neighborhood boundary).

## Description of each function within the Interactive Mapping environment

### *Panning/Zooming*

- Zooming In
  - click on “Zoom In” hyperlink (this zooms in based on the center point of the map)
  - check “Zoom In” radio button and click on the map (this re-centers the map to the point clicked and then zooms in)
  - check “Zoom In” and then draw a box on the map while holding the left mouse down (this zooms the map to the extent of the box drawn) *[not available in Netscape]*
- Zooming Out
  - click on “Zoom Out” hyperlink (this zooms out based on the center point of the map)
  - check “Zoom Out” radio button and click on the map (this re-centers the map to the point clicked and then zooms out)
- Panning/Re-centering
  - check “Pan/Re-center” radio button and click on the map (this re-centers the map to the point clicked)
  - click one of the arrows that border the map (this moves the map the direction of the arrow clicked)
- Initial View
  - Returns the map to the geographic areas that were selected back in NEO CANDO
- Full View
  - Zooms the map to show the entire county

### *Toggling Between Variables*

- Select a NEO CANDO variable from the “Choose a NEO CANDO variable to be mapped” list on the left side of the screen and then press the “Redraw Map” button.

### *Redraw Map Button*

- When a user changes map settings, the “Redraw Map” button sends those changes back to the server to draw a new map that reflects the changes
- The user may make several changes from different menus, but those changes will not be seen unless the user clicks the “Redraw Map” button.
- It is not necessary to click “Redraw Map” after each change to a map. Multiple changes can be made to the map and after all changes are made the user can click “Redraw Map.” The mapping interface will remember the changes you make and then apply those changes once the “Redraw Map” button is selected. However, if preferred the user can “Redraw Map” after each change is made.

### *Making Layers Visible*

- Check the box to the left of the layer name and click “Redraw Map”

### *Identifying Geographic Areas*

- Information
  - The identify tool displays data values (in a pop-up window) for geographic area(s) clicked on within the map
  - The user may select which layers they want to identify by checking the box to the right of the layer name
  - Layers that are not visible can still be identified
- To perform an Identify
  - Make sure at least one layer is selected
  - Select the “Identify” radio button
  - Click on the map (NOTE: When identifying point or line data, make sure to click on the point and not the label for that feature)

### *Customizing Layers*

- Click on the layer name of the reference layer you would like to customize
- Changing Geographic Features
  - Border/Line Type→ the pattern of lines
  - Border/Line Color→ the color of lines
  - Border/Line Transparency→ the transparency of lines
  - Border/Line Width→ the thickness of lines
  - Fill Type→ the pattern inside of a polygon
  - Fill Color→ the color inside a polygon
  - Fill Transparency→ the transparency of the pattern that fills a polygon
  - Point Type→ the symbol that displays a point on a map
  - Point Color→ the color of the symbol that displays a point on a map
  - Point Size→ the size of the symbol that displays a point on a map
- Changing Labels
  - Turn Labels On/Off→ switches labels between off/on
  - Text Color→ the color of the text
  - Text Size→ the size of the text
  - Bold→ whether or not text should be displayed using a bold font
  - Halo→ whether or not the text should have a halo around it
  - Halo Color→ the color of the text halo

### *Customize Mapped Variable*

- General Tab
  - Select Graduated Polygon or Graduated Points
  - Select color scheme
  - Controls of how to symbolize null values (*see “Customizing Layers”*)
  - Controls of how to symbolize suppression data (*see “Customizing Layers”*)
- Labels Tab
  - Allows users to display either the geographic identifier or variable values for the mapped NEO CANDO variable
  - *see “Customizing Layers”*

- Point Tab
  - Only applicable when users select Graduated Points (*see “Customizing Layers”*)
  - Use Polygon Outline → displays the outline for the polygon that a point symbolizing a data value is in [to change symbology use the border properties in the polygon tab]
  - Use Graduated Shapes → different shapes represent each classification [overrides point type setting]
  - User Graduated Colors → different colors represent each classification [overrides point color setting]
  - Use Graduated Size → different sizes represent each classification [overrides point size setting]
- Polygon Tab
  - Only applicable when users select Graduated Polygons or if Use Polygon Outline is checked (*see “Customizing Layers”*)
  - Use Graduated Colors → different colors represent each classification [overrides fill color setting]
  - User Graduated Fill → different fill types represent each classification [overrides fill type setting]
- Classification Tab
  - Defines the classification scheme
  - Allows users to choose the number of classes for the map (2 to 9)
  - Min and Max allows users to enter the minimum value they would like to see classified and the maximum value they would like to see classified
  - *If a “custom” classification is not defined properly, the classification type will automatically switch to equal interval*

#### *Customize Outline/Area of Interest*

- Outline → check on to see the outline of the geographic areas selected in NEO CANDO (If more than 100 geographic areas are selected, the outline feature will not be available)
- Exclude → check on to only see the data values for ONLY the geographic areas selected in NEO CANDO (checked on by default, uncheck to see entire county)
- *See “Customizing Layers”*

#### *Geographic Select/Zoom*

- Allows users to select a geographic level (tract, neighborhood, city, etc) and then one or more geographic areas
  - The selected geographic areas are displayed, labeled, and zoomed too
  - The polygons and labels that represent the geographic area can be customized (*see “Customizing Layers”*)

*Print Map*

- Creates a printer friendly map launched in a new window.
- Select file→ print

*Adding/Removing Layers*

- Click “Add/Remove Layers” hyperlink
- From the pop-up window, the layers available for that particular county are available
  - Check the layers you would like to include in the interactive mapping environment
  - Uncheck the layers you would like to exclude from the interactive mapping environment
  - Click “Redraw Map”

## How to Generate a Basic Map

**INITIAL MAP** → Once the user selects “Interactive Mapping” after getting data from NEO CANDO, NEO CANDO starts to export its data into the interactive mapping environment and a map appears. Here is some information about the initial map.

1. The first NEO CANDO variable chosen is mapped for the selected geographies and the chosen geographies are highlighted in black.
2. The light gray lines within the neighborhood boundary are the census tract boundaries. (Neighborhood was chosen as the geographic level and census tract was chosen as the report by geography on the first NEO CANDO page, therefore both the neighborhood boundaries and tract boundaries are displayed.)
3. The data values for the selected variable (in this case poverty rate) are displayed on the map in black.
4. This is a “Graduated Polygons” map where the color of each polygon (i.e. the neighborhood or census tract) represents a data classification – the legend at the bottom of the map displays the values represented by each color.
5. The mapped NEO CANDO variable is displayed using 5 classes and an equal interval classification. (see “*Basic Definitions*” for details on the available methods for classification).
6. To create a printer friendly map → select Print Map → choose File → choose Print

*(see basic map on next page)*

**NEO CANDO Interactive Mapping** Print Map

Customize Mapped Variable | Customize Outline/Area of Interest | Geographic Select/Zoom | Print Map | Return to Results | Documentation

Choose a NEO CANDO variable to be mapped  
Poverty rate, 1989  
Poverty rate, 1999

Select a tool then click or draw a box on map to:  Zoom In  Zoom Out  Pan/Recenter  Identify

Redraw Map

Available Data Layers  
**Add/Remove**  
visible layer name

- Freeway
- Main Street
- Side Street
- Tract
- Neighborhood
- City/Village
- Township (MCD)
- County
- Poverty rate, 1989

**Change Layer Order**

[Download Map/Legend](#)

Gray lines divide polygons

Each color represents a data classification

Selected Geographic Regions from NEO CANDO

Mapped NEO CANDO variable

Poverty rate, 1989

The NEO CANDO Variable is at the "Census Tract" geographic level

[Initial View](#) [Full View](#)

**Legend**

Poverty rate, 1989

- Selected neighbors
- 23-29
- 29-35
- 35-42
- 42-48
- 48-54

From this point on the user can customize the map by zooming to different views, making other data layers visible, including data values from outside the selected geographic areas by unchecking exclude, changing classification scheme, and changing the number of classes.

### Initial Map with Exclude Unchecked

The screenshot displays the NEO CANDO Interactive Mapping interface. The main map shows census tracts in Detroit, shaded according to poverty rates. A legend on the left indicates the following categories for 'Poverty rate, 1989':

Poverty Rate Range	Color
1-21	Lightest Blue
21-41	Light Blue
41-60	Medium Blue
60-80	Dark Blue
80-100	Darkest Blue

The 'Customize Geographies' dialog box is open, showing the 'Area of Interest' tab. The 'Exclude' checkbox is unchecked, and the 'Outline' checkbox is checked. The 'Fill' section shows 'Type' set to 'Solid' and 'Color' set to 'Blue'. The 'Border' section shows 'Type' set to 'Solid' and 'Color' set to 'Black'. The 'Trans.' (transparency) is set to 100%.

Exclude Unchecked and all tracts are mapped

Notice all census tracts are mapped

## ADDITIONAL NEO CANDO INTERACTIVE MAPPING GUIDE

### MAP FEATURES

Available variables exported from NEO CANDO (to change variables: click variable name, then click "Refresh Map")

Fixed Zoom In/Out → click hyperlink (zooms in or out keeping the map's center point centered)

The screenshot shows the NEO CANDO Interactive Mapping interface. At the top, there is a navigation bar with links: [Customize Mapped Variable](#), [Customize Outline/Area of Interest](#), [Geographic Select/Zoom](#), [Print Map](#), [Return to Results](#), and [Documentation](#).

Below the navigation bar, there is a section titled "Choose a NEO CANDO variable to be mapped" with a dropdown menu showing "Poverty rate, 1989" and "Poverty rate, 1999". To the right, there are radio buttons for "Zoom In", "Zoom Out", "Pan/Recenter", and "Identify".

The main map area displays a map of Detroit with census tracts shaded in various shades of blue, representing poverty rates in 1989. Two specific areas are highlighted in yellow: "Detroit-Shoreway" and "Clark-Pittenger". A scale bar at the bottom of the map indicates 1.12 miles.

On the left side, there is a "Redraw Map" button and a section titled "Available Data Layers" with a table of layers:

visible	layer name	identify
<input type="checkbox"/>	<a href="#">Freeway</a>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Main Street</a>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Side Street</a>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Tract</a>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">Neighborhood</a>	<input type="checkbox"/>
<input type="checkbox"/>	<a href="#">City/Village</a>	<input type="checkbox"/>

Below the table, there is a "Download Map/Legend" link.

At the bottom of the map area, there is a legend titled "Poverty rate, 1989" with a color scale from 1-21 (lightest blue) to 60-80 (darkest blue). There is also a "Selected neighbors" checkbox.

Annotations with arrows point to various features:

- From the "Choose a NEO CANDO variable to be mapped" section to the variable list.
- From the "Zoom In/Out" section to the "Zoom In" and "Zoom Out" radio buttons.
- From the "Available Data Layers" section to the table.
- From the "Redraw Map" section to the "Redraw Map" button.
- From the "Zooms to the extent of the geographic areas chosen in NEO CANDO" section to the "Detroit-Shoreway" and "Clark-Pittenger" labels on the map.
- From the "Redraw Map → Submits map customizations to the mapping server and returns a new map reflecting the changes made" section to the "Redraw Map" button.
- From the "Zooms to the extent of the county" section to the "Full View" link.
- From the "Use arrows to move the map extent the direction of the arrow (panning)" section to the map area.

Changes how the mapped variable from NEO CANDO is drawn, including: classification scheme, null and suppressed values, change classification type, and number of classes (see "Changing Classification" and "Changing from Graduated Points to Graduated Polygons" example)

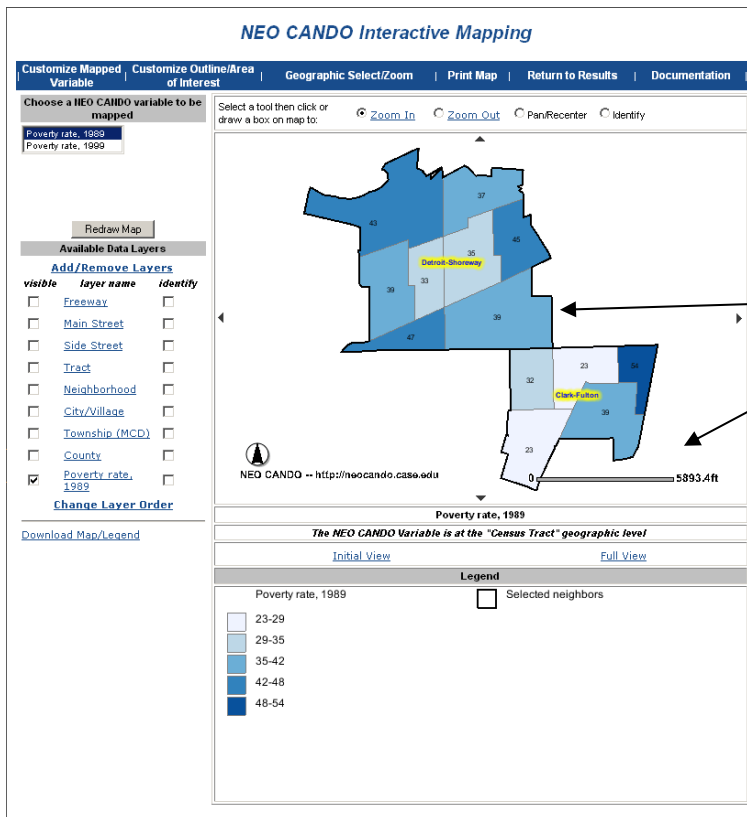
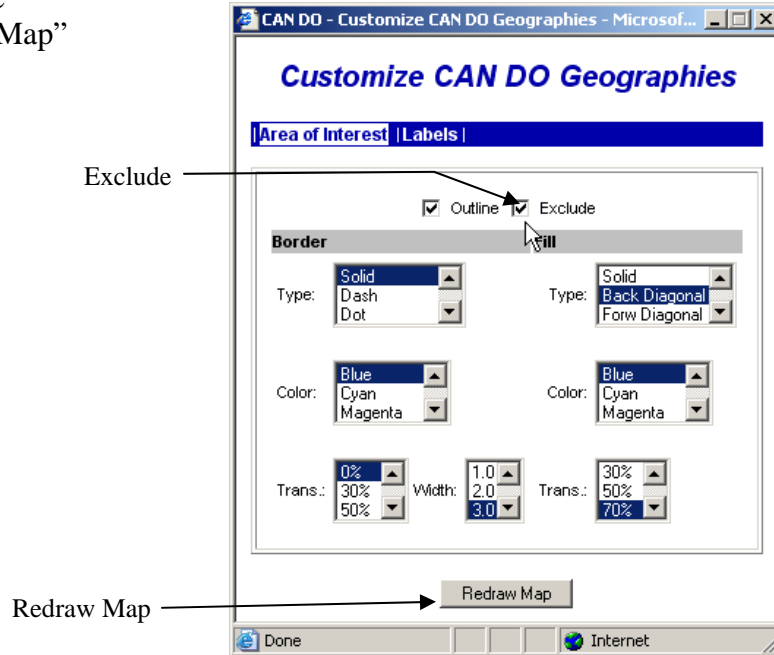
Deals with the geographic areas chosen in NEO CANDO → changes how the selected geographic are drawn and excludes the active NEO CANDO variable to the selected geographic areas (see "Data Exclusion" example)

Allows a user to select, draw, and zoom to particular geographic areas (see "Geographic Selection Tool" example)

Returns back to NEO CANDO data table  
 Creates a printer friendly map (see "Printer Friendly Map" example)

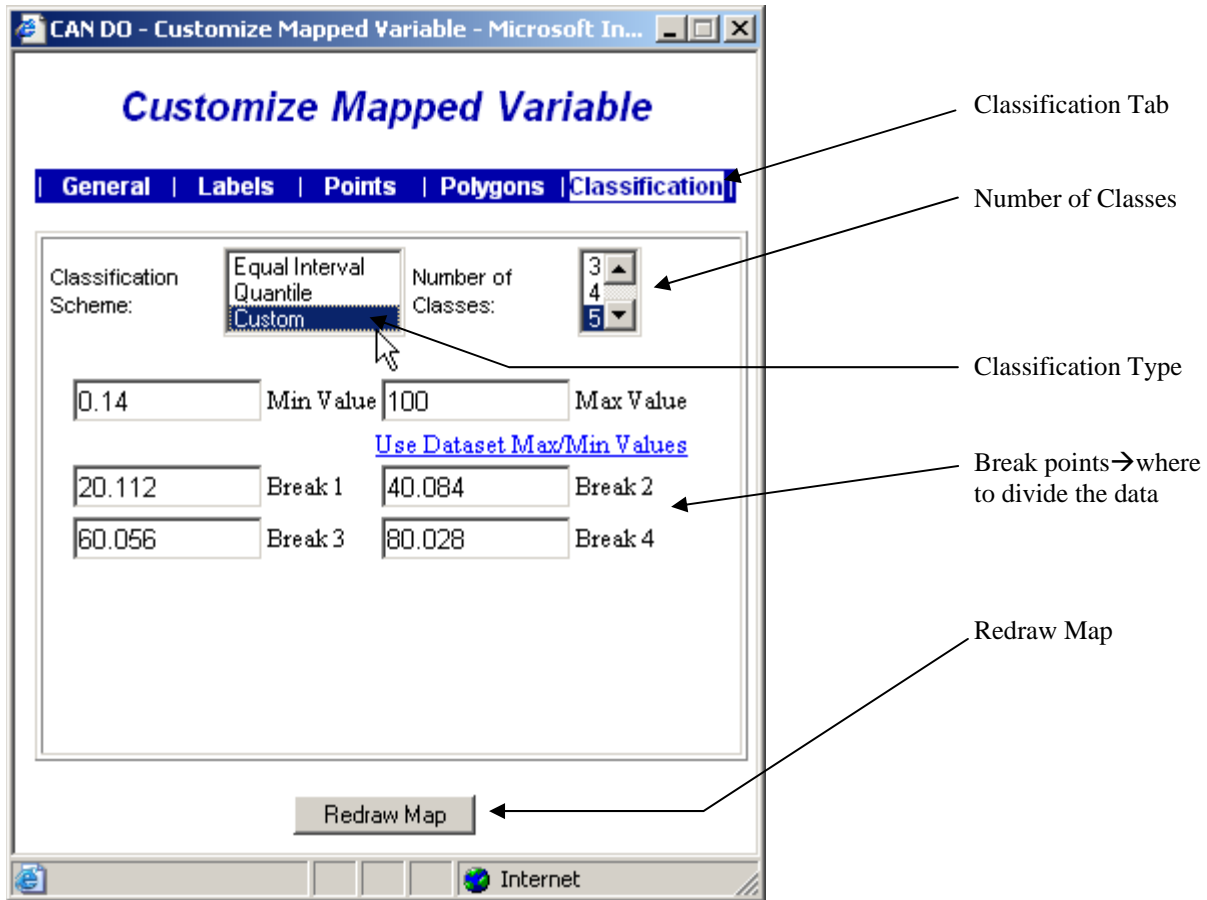
**DATA EXCLUSION** → To display a map of **ONLY** the geographic regions chosen in NEO CANDO (this is turned on by default).

1. Click “Customize Outline/Area of Interest”
2. Check “Exclude”
3. Click “Redraw Map”



## CHANGING CLASSIFICATION

1. Click “Customize Mapped Variable”
2. Click “Classification Tab”
3. Select “Classification Type” (equal interval, quantile, or custom)
4. Select “Number of Classes”
5. Enter class breaks if doing a “custom” classification [where you want to divide the data]
6. Click “Redraw Map”





**IDENTIFYING**→Identify retrieves data for a point clicked on the map. [Works best in Internet Explorer]

1. Click the “Identify” radio button
2. Check the layers you would like to return data for
3. Click the map and a pop-up window will display information

The screenshot shows the NEO CANDO Interactive Mapping interface. The top navigation bar includes options like 'Customize Mapped Variable', 'Customize Outline/Area of Interest', 'Geographic Select/Zoom', 'Print Map', 'Return to Results', and 'Documentation'. The main interface has a left sidebar with 'Available Data Layers' and a central map area. The 'Identify' radio button is selected in the top toolbar. A red square on the map indicates the point clicked. A pop-up window titled 'Identify Results - Microsoft Internet Explorer' is open, showing data for two layers: 'Poverty rate, 1989' and 'Neighborhood'. The 'Poverty rate, 1989' layer shows a tract value of 1035.00 and two data values: 40 and 45. The 'Neighborhood' layer shows a record value of Edgewater. A legend at the bottom left of the map area shows poverty rate ranges from 1-21 to 61-80. A 'Close' button is visible in the pop-up window.

Layers to be included in identify

Layer: Poverty rate, 1989	
TRACT: 1035.00	
Variable Name	Data Values
POVERTY RATE, 1989	40
POVERTY RATE, 1989	45

Layer: Neighborhood	
RECORD 1	
Variable Name	Data Values
NEIGHBOR	Edgewater

Results

## GEOGRAPHIC SELECTION TOOL

1. Check "Make Selected Geography Visible"
2. Choose a "Geographic Level" (tract, mcd-place, etc)
3. Choose "Geographic Areas"
4. Click "Redraw Map"

The screenshot shows the NEO CANDU Interactive Mapping application. The main window is titled "NEO CANDU Interactive Mapping" and has a menu bar with "Customize Mapped Variable", "Customize Outline/Area of Interest", "Geographic Select/Zoom", and "Print Map". Below the menu bar, there are options to "Choose a NEO CANDU variable to be mapped" (Poverty rate, 1989 and Poverty rate, 1999) and "Select a tool then click or draw a box on map to:" (Zoom In and Zoom Out). A "Redraw Map" button is also present.

The "Geographic Search Tool" window is overlaid on the map. It has a menu bar with "Geographic Selection", "Polygons", and "Labels". The "Geographic Selection" menu is open, showing a checked box for "Make Selected Geography Visible" and a "Choose a Geographic Level" dropdown menu. The dropdown menu is open, showing a list of geographic levels from 1061.00 to 1071.00. The "1069.00" level is selected. A "Redraw Map" button is also visible in the tool window.

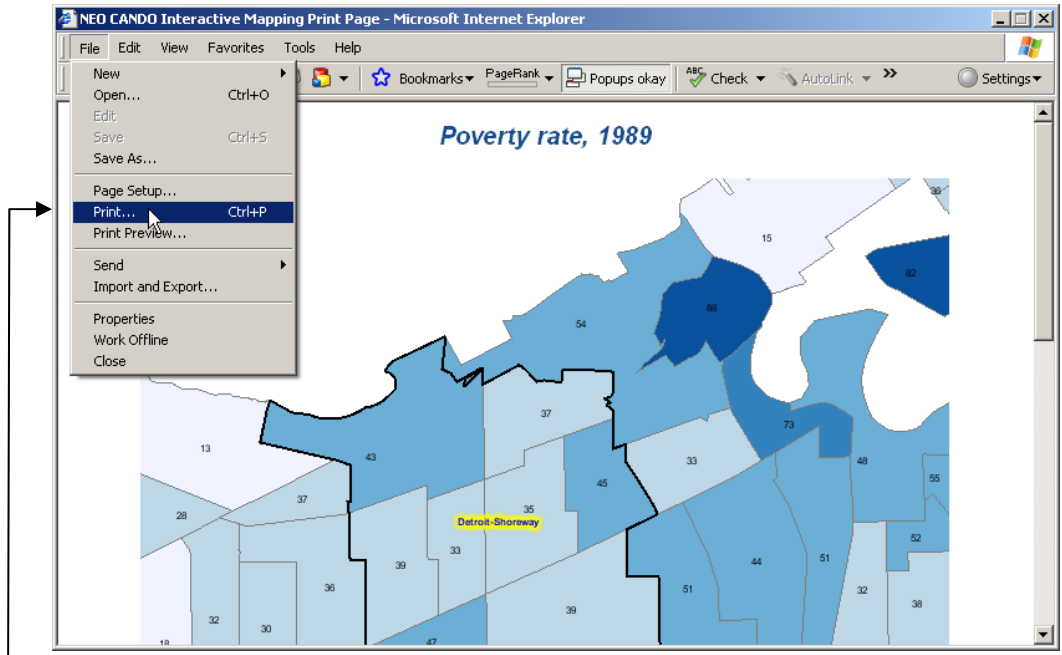
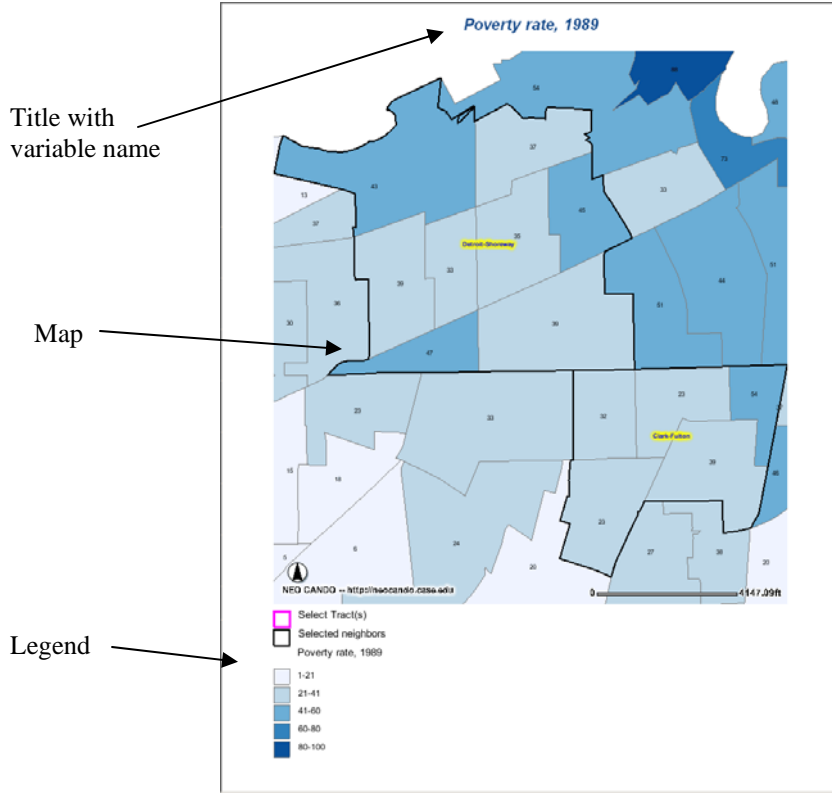
The map shows a poverty rate in 1989. A pink outline highlights a specific geographic area, which is identified as a tract. The value "1069.00" is displayed next to the pink outline. The map also shows other geographic areas, such as tracts 6, 8, 11, and 5.

The legend at the bottom of the screen is titled "Legend" and shows the following items:

- Poverty rate, 1989
- 1-21
- 21-41
- 41-60
- 60-80
- 80-100
- Select Tract(s)
- Selected neighbors

Annotations with arrows point to the "Make Selected Geography Visible" checkbox, the "Choose a Geographic Level" dropdown, the "1069.00" value, and the "Redraw Map" button in the tool window. A text box on the right says "The geographic identifier for the selected geographic area (in this example, tract number)". A text box at the bottom left says "Selected geography (in this example, tract)".

## PRINTER FRIENDLY MAP



Choose file → print to send the map to your printer

## ADDING/REMOVING LAYERS

1. Click "Add/Remove Layers" hyperlink
2. In the popup window, check the layers to include/uncheck the layers to exclude
3. Click "Redraw Map"

**NEO CANDO Interactive Mapping**

Customize Mapped Variable | Customize Outline/Area of Interest | Geographic Select/Zoom | Print Map | Return to Results | Documentation

Choose a NEO CANDO variable to be mapped: Poverty rate, 1989 | Poverty rate, 1999

Select a tool then click or draw a box on map to: Zoom In | Zoom Out | Pan/Recenter | Identify

Redraw Map

Available Data Layers

visible	layer name	identity
<input type="checkbox"/>	Freeway	
<input type="checkbox"/>	Main Street	
<input type="checkbox"/>	Side Street	
<input type="checkbox"/>	Tract	
<input type="checkbox"/>	Neighborhood	
<input type="checkbox"/>	City/Village	
<input type="checkbox"/>	Township (MCD)	
<input type="checkbox"/>	County	
<input checked="" type="checkbox"/>	Poverty rate, 1989	

Change Layer Order

Download Map/Legend

The NEO CANDO Variable is at the "Census Tract" geographic level

Initial View | Full View

Legend

Poverty rate, 1989	Selected neighbors
1-21	<input type="checkbox"/>
21-41	
41-60	
60-80	
80-100	

**Add/Remove Layers**

Check a layer to make it available to the CANDO Interactive Map or uncheck a layer to remove it from the CANDO Interactive Map. After checking/unchecking the desired layers, click "Redraw Map". NOTE: the order in which the layers are drawn will resort back to the default layer order until changed using "Change Layer Order".

Available Layers

- High School
- Middle School
- Elementary School
- Cleveland NFSC
- SP Preschool
- SP School Age
- SP Child Care
- Cleveland NFSC
- Freeway
- Main Street
- Side Street
- Parcel
- Tract
- Neighborhood
- McD-Place
- County

Add/Remove Scale Bar and North Arrow

- North Arrow
- Scale Bar

Redraw Map

**NEO CANDO Interactive Mapping**

Customize Mapped Variable | Customize Outline/Area of Interest | Geographic Select/Zoom | Print Map | Return to Results | Documentation

Choose a NEO CANDO variable to be mapped: Poverty rate, 1989 | Poverty rate, 1999

Select a tool then click or draw a box on map to: Zoom In | Zoom Out | Pan/Recenter | Identify

Redraw Map

Available Data Layers

visible	layer name	identity
<input checked="" type="checkbox"/>	SP Preschool	
<input checked="" type="checkbox"/>	SP School Age	
<input checked="" type="checkbox"/>	SP Child Care	
<input type="checkbox"/>	Freeway	
<input type="checkbox"/>	Main Street	
<input type="checkbox"/>	Side Street	
<input type="checkbox"/>	Tract	
<input type="checkbox"/>	Neighborhood	
<input type="checkbox"/>	City/Village	
<input type="checkbox"/>	Township (MCD)	
<input type="checkbox"/>	County	
<input checked="" type="checkbox"/>	Poverty rate, 1989	

Change Layer Order

Download Map/Legend

The NEO CANDO Variable is at the "Census Tract" geographic level

Initial View | Full View

Legend

Poverty rate, 1989	SP Child Care	SP School Age	SP Preschool	Selected neighbors
1-21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21-41				
41-60				
60-80				
80-100				

**Add/Remove Layers**

Check a layer to make it available to the CANDO Interactive Map or uncheck a layer to remove it from the CANDO Interactive Map. After checking/unchecking the desired layers, click "Redraw Map". NOTE: the order in which the layers are drawn will resort back to the default layer order until changed using "Change Layer Order".

Available Layers

- High School
- Middle School
- Elementary School
- Cleveland NFSC
- SP Preschool
- SP School Age
- SP Child Care
- Cleveland NFSC
- Freeway
- Main Street
- Side Street
- Parcel
- Tract
- Neighborhood
- McD-Place
- County

Add/Remove Scale Bar and North Arrow

- North Arrow
- Scale Bar

Redraw Map

Added layers are added to map and legend