Worksheet 2:
Interpreting Urban Heat Island Maps

Part 1: Important information about urban heat islands can be obtained from maps. Before the information on a map can be described and analyzed, it is necessary to have a clear understanding of what the map is about. This is the first step in obtaining information from a map.

1. **What is the map about?** This involves previewing the map:

    Inspect the title—by Inspecting the title, you can find out the subject of the map, the area for which information is shown, and when the information was gathered. (Some of this information may appear in the map notes—see below.)

    Decode the symbols—by decoding the map symbols in the key (legend), you can find out what the symbols on the map mean. Sometimes symbols are used that are not listed in the legend.

    Check the map scale—by checking the map scale, you can tell the relation between distance on the map and distance on the ground.

    Examine the compass to find north—by knowing where north and other cardinal directions are make it possible to find and describe the location of features on the map.

    Check the foot notes—by checking the map notes, you can tell the source of the information in the map.

    Examine the **Land Surface Temperature (LST) Map**. Determine what it is about by completing the five tasks listed below. Write your answers in the spaces below.

    a. Inspect the title

    b. Describe the symbols

    c. Examine the scale

    d. Use the compass to find north

    e. Check the footnotes

2. **What does the map say?** The second step in obtaining information from a map involves asking and answering questions about how things are arranged on the map.

Ask and answer "fact finder" questions. Some questions are asked to find facts that are important. Answering "fact finders" supplies you with basic information about the features on the map.

Ask and answer "pattern finder" questions. Pattern finders ask how things are arranged over the map. A basic distinction is made among clustered, random, and even arrangements. With clustered arrangements, things are located close together. With an uniform arrangement, things are evenly spread over the area. With random arrangements, there is no pattern to how things are arranged. Answering pattern finders supplies you with information about the arrangement of features on the map.

Examine the LST Map. Determine how the features on the map are arranged by answering the following questions. Write your answers in the spaces below.

   a. Are there areas of high land surface temperature shown on the map of Marion County?

   b. Is the arrangement of areas experiencing high land surface temperatures clustered, random or uniform? What makes you say so?

   c. Is the arrangement of areas experiencing low land surface temperatures clustered, random or uniform? What makes you say so?

   d. Where on the map are the areas of high land surface temperatures clustered?

3. **What does the map mean?** The information obtained from a map should be combined into a brief, well-organized summary paragraph. This is the final step in obtaining information from a map. The summary involves speculating about the factors that could have led to the patterns in the distribution seen on the map and/or the possible implications of the patterns observed.

This summary paragraph should be comprised of five to six sentences that draw together the information obtained from the map.

Consider the **LST Map**. In the space provided below, write a short paragraph summarizing the information obtained from the map.

Part 2: Use the same three-step procedure to gather information from the **Median Household Income (MHI) Map.**

1. Determine what the **MHI Map** is about by completing the five tasks listed below. Write your answers in the spaces below.

    a. Inspect the title

    b. Describe the symbols

    c. Examine the scale

    d. Use the compass to find north

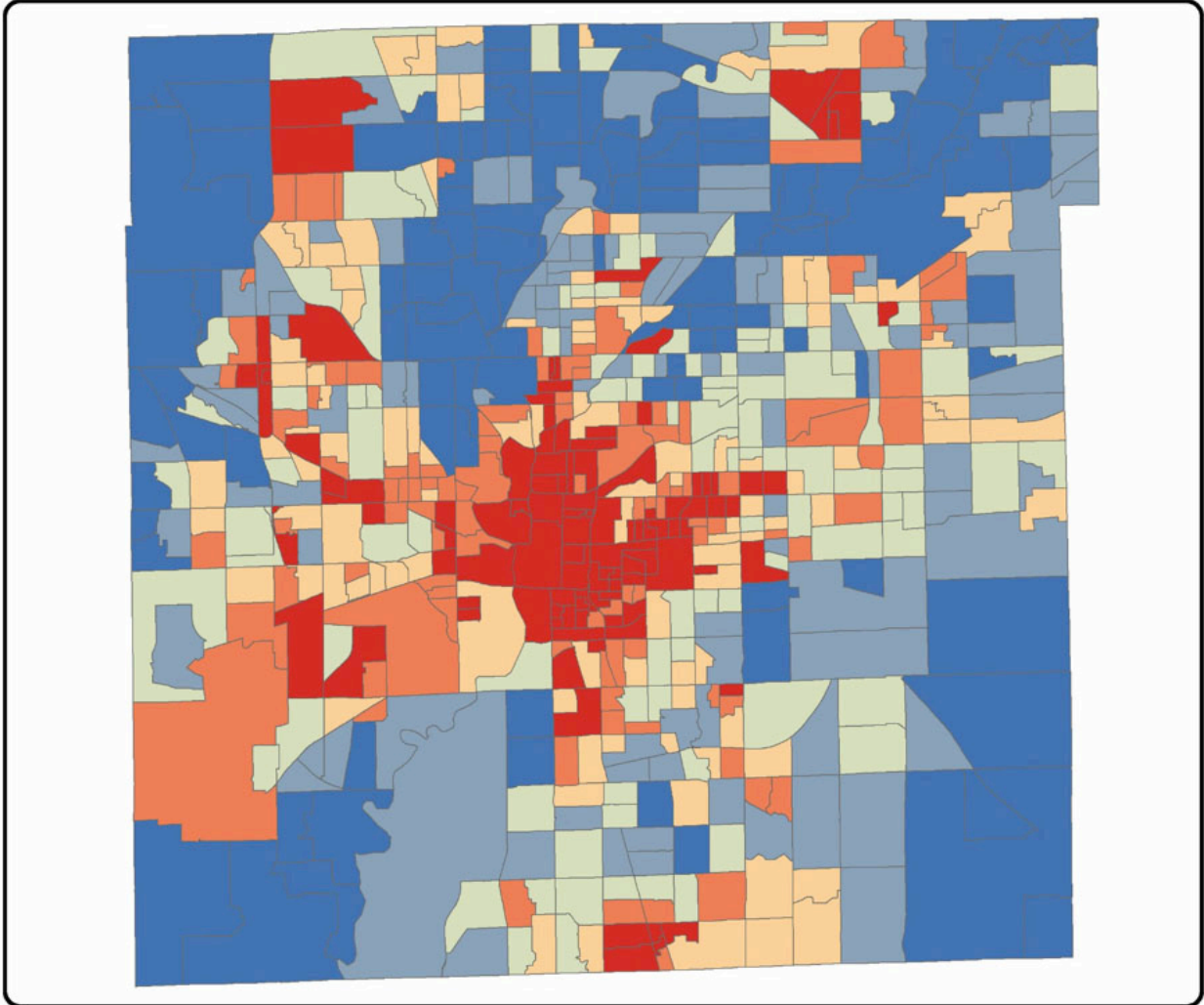   e. Check the footnotes

2. Examine the **MHI Map**. Determine how the features on the map are arranged by answering the following questions. Write your answers in the spaces below

    a. Are there areas of low median household income shown on the map of Marion County?

    b. Is the arrangement of areas experiencing low median household income clustered, random or uniform? What makes you say so?
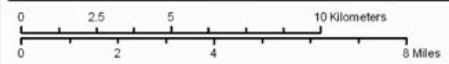
    c. Where are high median household incomes located?

    d. Where on the map are the areas of low median household incomes clustered?

3. Consider the **MHI Map**. In the space provided below, write a short paragraph summarizing the information obtained from the map.
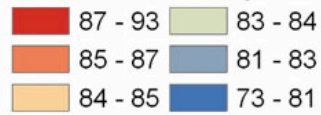
Part 3: Use the same three-step procedure to gather information from the **Extreme Heat Vulnerability Index (EHVI) Map**.

1. Determine what the **EHVI Map** is about by completing the five tasks listed below. Write your answers in the spaces below.

    a. Inspect the title

    b. Describe the symbols

    c. Examine the scale

    d. Use the compass to find north

    e. Check the footnotes

2. Examine the EHVI Map. Determine how the features on the map are arranged by answering the following questions. Write your answers in the spaces below

    a. Are there areas of high heat risk shown on the map of Marion County?

    b. Is the arrangement of areas experiencing high heat risk levels clustered, random or uniform? What makes you say so?

    c. Is the arrangement of areas experiencing low heat risk levels clustered, random or uniform? What makes you say so?

    d. Where on the map are the areas of high heat risk clustered?

3. Consider the **EHVI Map**. In the space provided below, write a short paragraph summarizing the information obtained from the map.

Land Surface Temperature (LST) Modeling

0   2.5   5   10 Kilometers
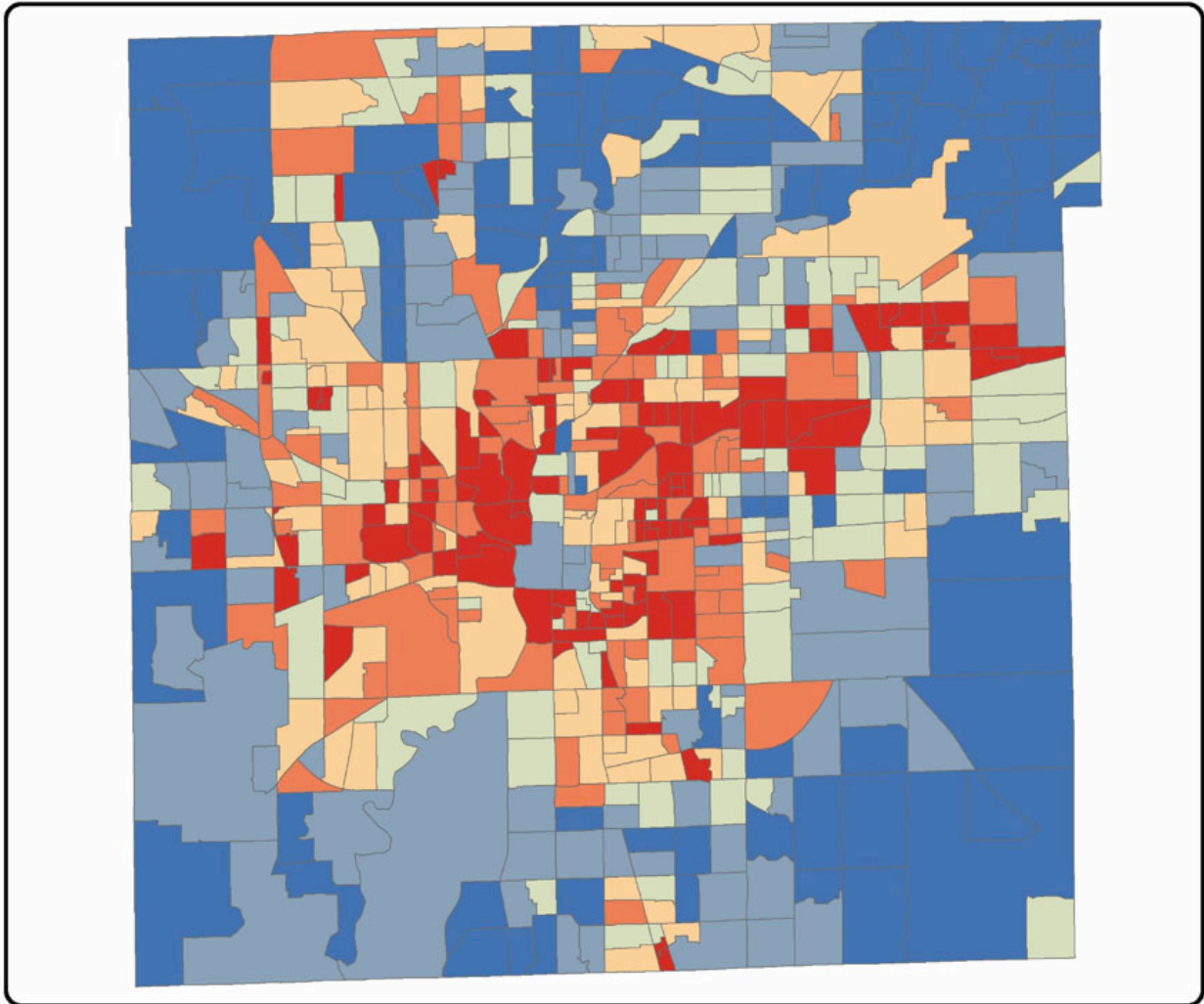
0   2   4   8 Miles

EHVI Analysis of Indianapolis, IN; Department of Geography ~ IUPUI

Analysis: Johnson et al. (2012)
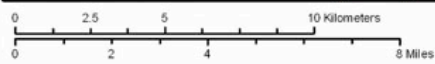Source: Marion County Census Blockgroups (2010), LST (Landsat5, 07.15.11)

N
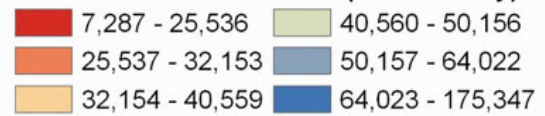W — E
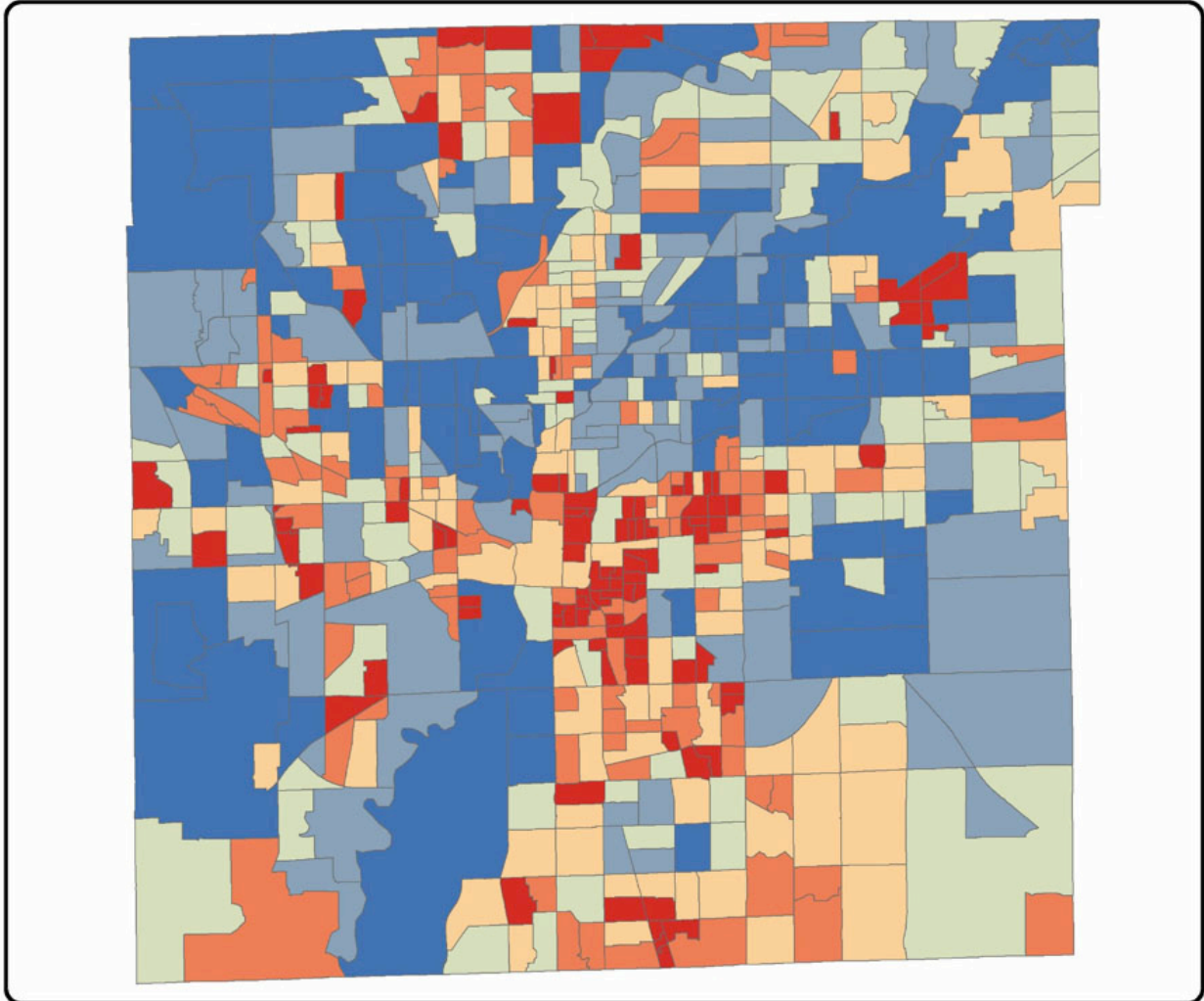S

Land Surface Temperature (Fahrenheit)

- 87 - 93
- 85 - 87
- 84 - 85
- 83 - 84
- 81 - 83
- 73 - 81

Median Household Income (MHI) Modeling

0   2.5   5   10 Kilometers

0   2   4   8 Miles

EHVI Analysis of Indianapolis, IN; Department of Geography ~ IUPUI

Analysis: Johnson et al. (2012)
Source: Marion County Census Blockgroups (2010), LST (Landsat5, 07.15.11)
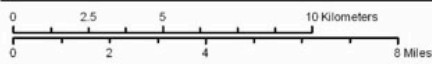
Median Household Income (US Currency)

7,287 - 25,536	40,560 - 50,156
25,537 - 32,153	50,157 - 64,022
32,154 - 40,559	64,023 - 175,347

Urban Heat Islands: Lesson Two

Extreme Heat Vulnerability   **Index (EHVI) Modeling**

0   2.5   5   10 Kilometers

0   2   4   8 Miles

EHVI Analysis of Indianapolis, IN; Department of Geography ~ IUPUI

Analysis: Johnson et al. (2012)
Source: Marion County Census Blockgroups (2010), LST (Landsat5, 07.15.11)

Indianapolis 2010 EHVI Risk Level

Color	Risk Level	Color	Risk Level
▮	High High	▮	Medium Low
▮	High Low	▮	Low High
▮	Medium High	▮	Low Low