

U2L1A3 | Analyzing our ecological footprints

2. Using the data found at www.panda.org/lpr/gfootprint, compare your class' average to the Canadian average. How does it compare? Provide two–three possible reasons why your class deviates from the Canadian average.

3. How many acres does the average American consume? The average Russian?

4. What implications could this data have in regards to the long term health and sustainability of our planet?

individual choices unit two



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overview

This lesson will have you compare your ecological footprints with your classmates and make country comparisons.

learning goal

- To be able to describe and understand the relationships between wealth and a nation's ecological footprint, using GIS.

success criteria

- You will complete the GIS Ecological Footprint Activity.

Inquiry question

- “Is Ecological Footprint just another measure of wealth?”

Comparing ecological footprint to wealth

Follow the steps for creating a series of maps using ArcGIS (version 10.1). These maps will help you see patterns and trends related to the ecological footprint of nations.

- Open ArcMap.
- Select *A New Empty Map* and click *Okay*
- Find and click the *Add Data* button in the tool bar (image of a black plus sign)
- Connect to the data folder on the Shared drive
- Go to the data directory, double-click *EcoFootprint.gdb* then click *globaldata*, then *Add*

To display ecological footprint...

- Right-click *globaldata* in the Layers menu
- Choose *Properties*
- Choose the *Symbology* tab
- In the Show window, choose *Quantities* and then *Graduated Colours*
- Under *Value Field*, use the drop down arrow and choose *EF_2007*

To display the ecological footprint data in a way that allows us to understand the levels, you need to reclassify the data. To reclassify...

- Choose *Properties*
- Choose the *Symbology* tab
- Under *Classification*, change *Classes* to 5
- Click the *Classify* button
- Click the *Exclusion* button (this will allow students to exclude the -99 values – no data)
- Make sure the *Query* tab is selected, then double-click “EF_2007”, single-click ‘=’ then click the *Get Unique Values* button and double-click -99 from the list
- Before choosing *OK*, click the *Legend* tab, checkmark the ‘Show symbol for excluded data,’ make the symbol ‘hollow’ (click *OK* to accept) and enter ‘No Data’ for the *Label*.
- Then click *OK*
- Click *OK* again

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- At this point, you may notice that the Range and Labels are still registering -99. This is a bug in the program and to fix it you simply click on the Value dropdown and choose EPI then click back on EF_2007. The exclusion will still hold and you should end up with 5 classes starting at 0.
- To set more usable classes, under Range, click the numbers beside each coloured symbol and set them to:
 - 2
 - 4
 - 6
 - 8
 - 10.68
- Click *Okay*
- Rename the map layer *globaldata* to Ecological Footprint—click on the name once to highlight it and then once to allow you to rename it
- Rename the EF_2007 filename to hectares (for the units)

This map displays ecological footprint by nation.

To Display GNI PPP per capita...

- Find and click the *Add Data* button in the tool bar (image of a black plus sign)
- Add the wealth.shp layer
- Right click wealth in the Layers menu
- Choose Properties
- Choose the Symbology tab
- In the Show window, choose Quantities and then Graduated Colours
- Under Value Field, use the drop down arrow and choose GNI_pc_11

To display the wealth data in a way that allows us to understand the levels, you need to reclassify the data. To reclassify...

- Under Classification, change Classes to 5
- Click the *Classify* button
- Click the *Exclusion* button (this will allow students to exclude the -99 values – no data)
- Make sure the Query tab is selected, then double-click “GNI_pc_11”, single-click ‘=’ then click the Get Unique Values button and double-click -99 from the list
- Before choosing OK, click the Legend tab, checkmark the ‘Show symbol for excluded data,’ make the symbol ‘hollow’ (click OK to accept) and enter ‘No Data’ for the Label.
- Then click OK
- Click OK again
- At this point, you may notice that the Range and Labels are still registering -99. This is a bug in the program and to fix it you simply click on the Value dropdown and choose another field name then click back on EF_2007. The exclusion will still hold and you should end up with 5 classes starting at 0

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- To set more usable classes, under Range, click the numbers beside each coloured symbol and set them to:
0
4000
10000
20000
40000
86440
- Click Okay
- Rename the map layer wealth to Wealth—click on the name once to highlight it and then once to allow you to rename it
- Repeat for the GNI_pc_11 and change it to \$

This map displays Gross National Income per capita by nation.

Map 1: Ecological footprint

This map displays Ecological Footprint by country. What are the patterns on this map? Be sure to use proper geographic terminology when describing what you see.

Map 2: Wealth

This map displays GNI PPP per capita for each country in the world. Using the Internet, define GNI PPP per capita:

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What are the patterns on this map? Be sure to use proper geographic terminology when describing what you see (such as north, south, east, west, region names, country names, continent names, where are the dark regions, where are the lighter ones etc.)

Analysis

Is ecological footprint another measure of wealth? Answer this by describing the similarities and/or differences between the patterns on the maps. Provide at least two examples to support your opinion.
