CARTOGRAPHY

Chapter 1
Cartography definition

What is cartography

- Cartography is the art and science of making maps.
- There are standard cartographic conventions for making scale maps.

What is on a map?

- Physical Features ظاهرات طبيعية
  - Geology, forestry, soils, rivers, contours, vegetation, landcover etc.
- Cultural features ظاهرات حضرية
  - Roads, railway lines, artificial lakes, buildings, landuse, etc.
- Numeric data بيانات رقمية
  - Income, population data (census data), etc

Types of Maps

- Thematic موضوعية

  A map designed to convey information about a single topic or theme, such as population density or geology.

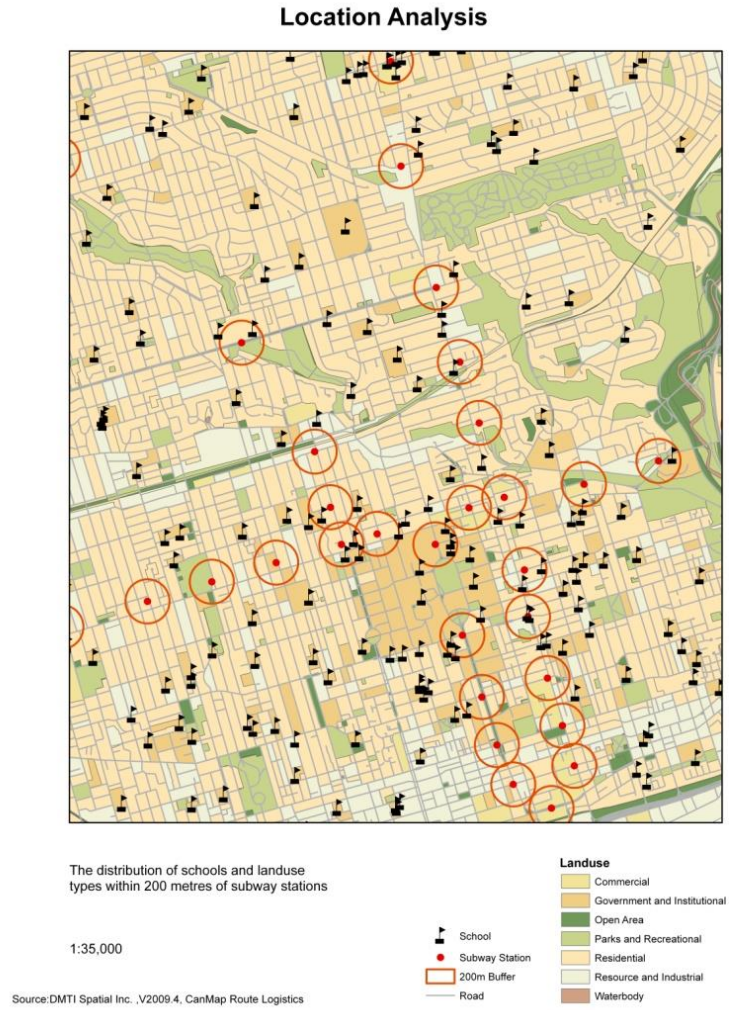
  http://resources.arcgis.com/glossary/term/1109

- Topographic طبوغرافية

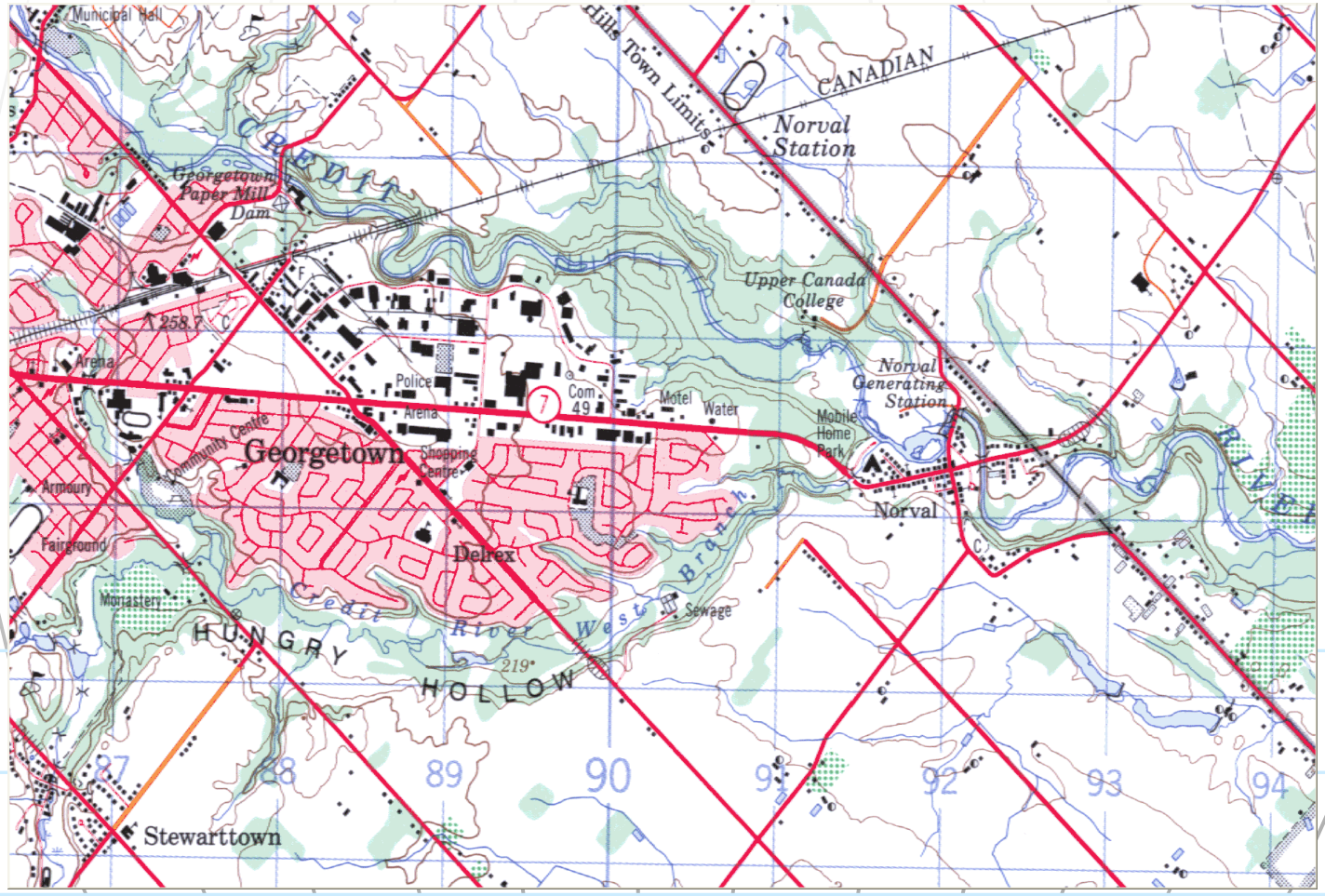
  A topographic map is a detailed and accurate graphic representation of cultural and natural features on the ground.

  http://maps.nrcan.gc.ca/topo101/faq_e.php

Thematic Map



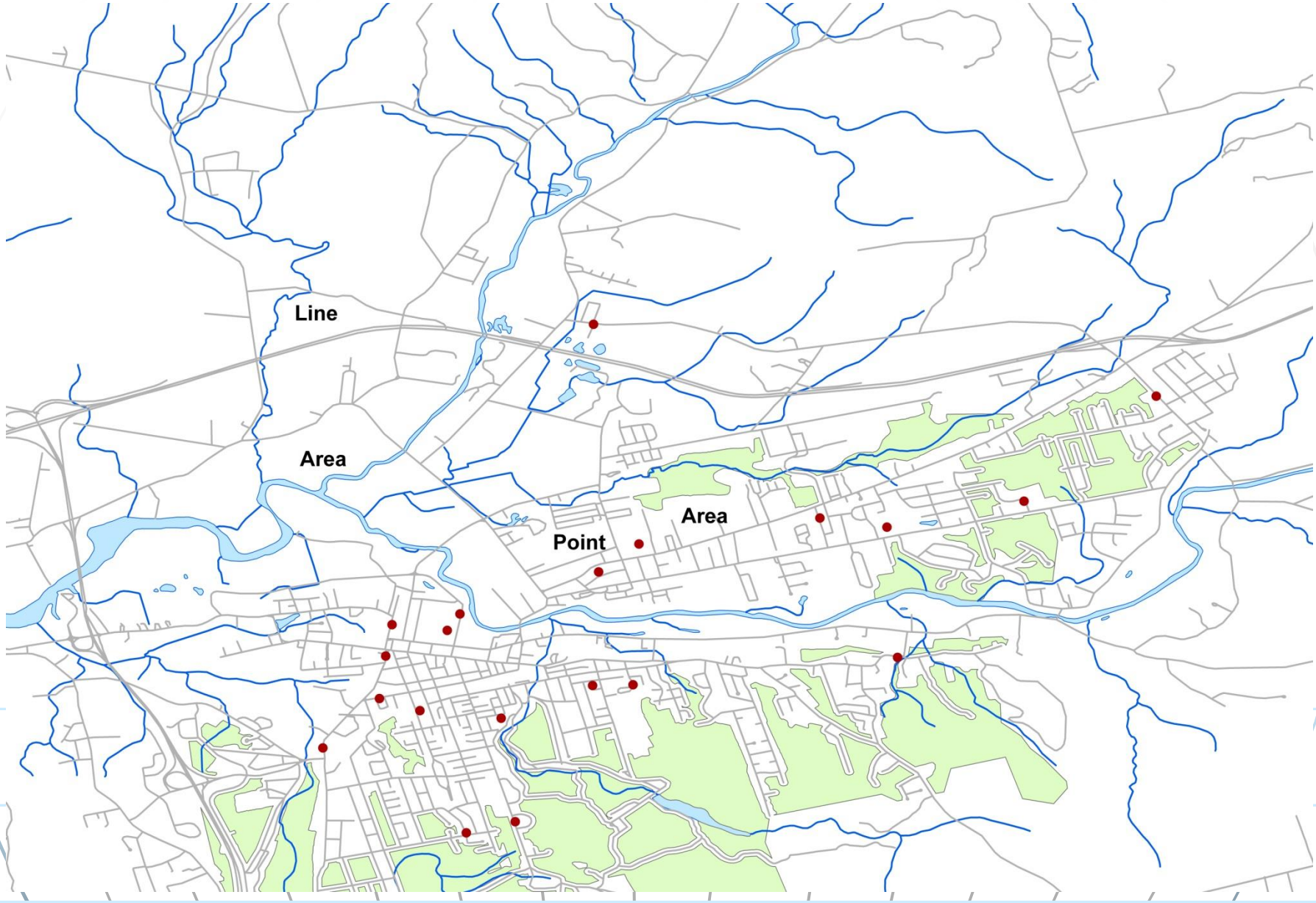
Topographic Map



From www.geogratis.ca

Map Features خصائص الخريطة

- Point نقاط
  - City
  - Church
- Line خط
  - River
  - Street
  - Railway
- Area مساحة
  - City
  - Geological features
  - Forest
  - Landuse



Source:DMTI Spatial Inc. V2009.4, Canmap Route Logistics

Data and Mapping

- Qualitative (وصفي) نوعي
  - Shows spatial distribution or a location of data e.g. geology map, soils, land use, etc.
  - Not dependent on numeric data

- Quantitative (رقمي) كمي
  - Shows the spatial aspects of numerical data e.g. income data, population density etc

Quantitative Values

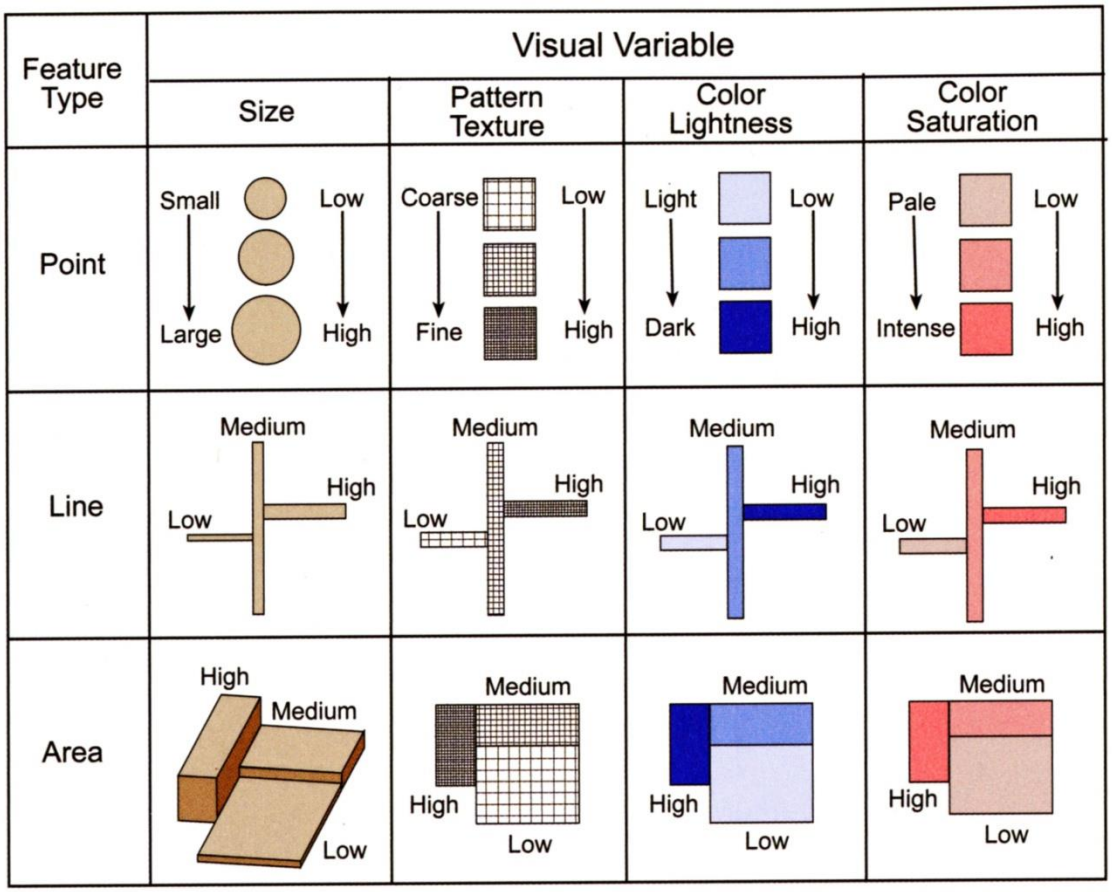
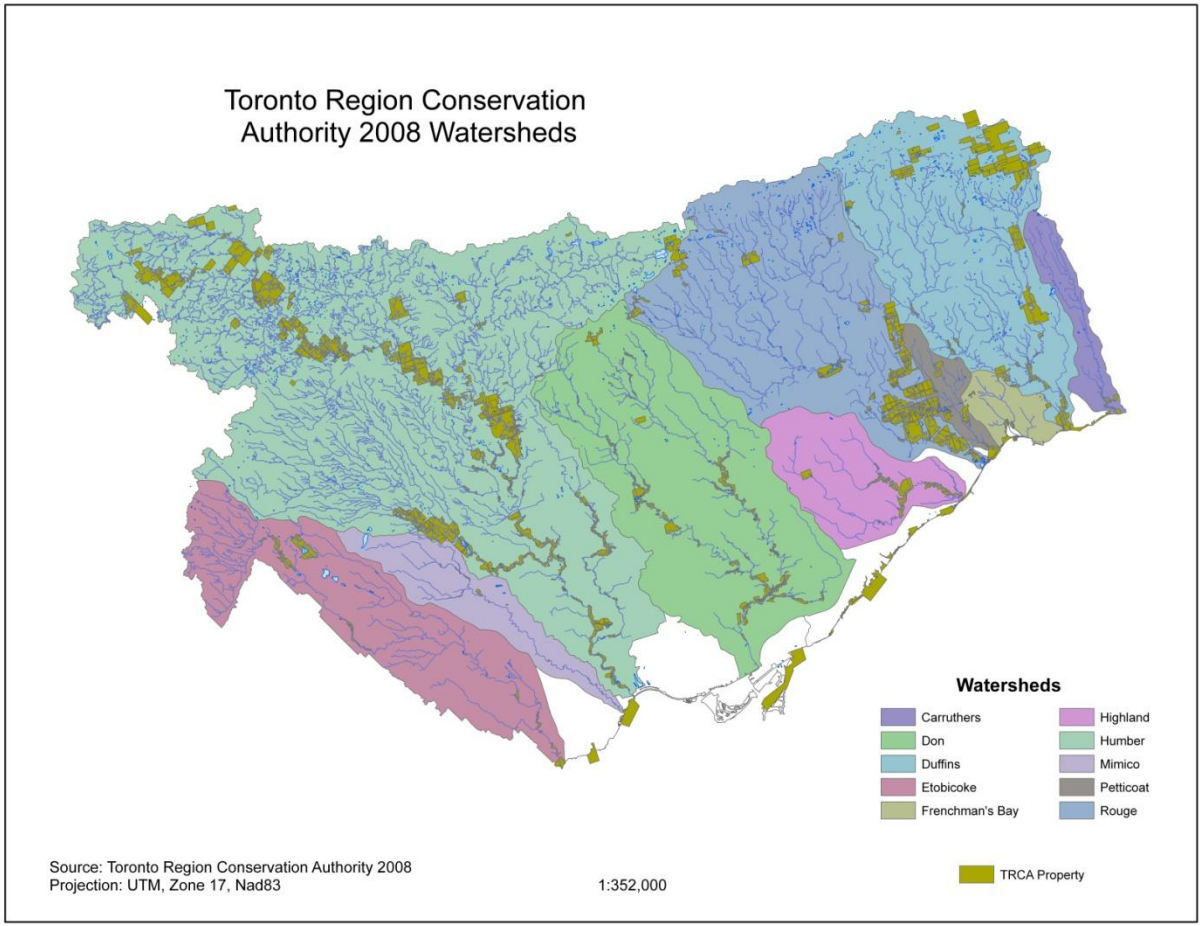


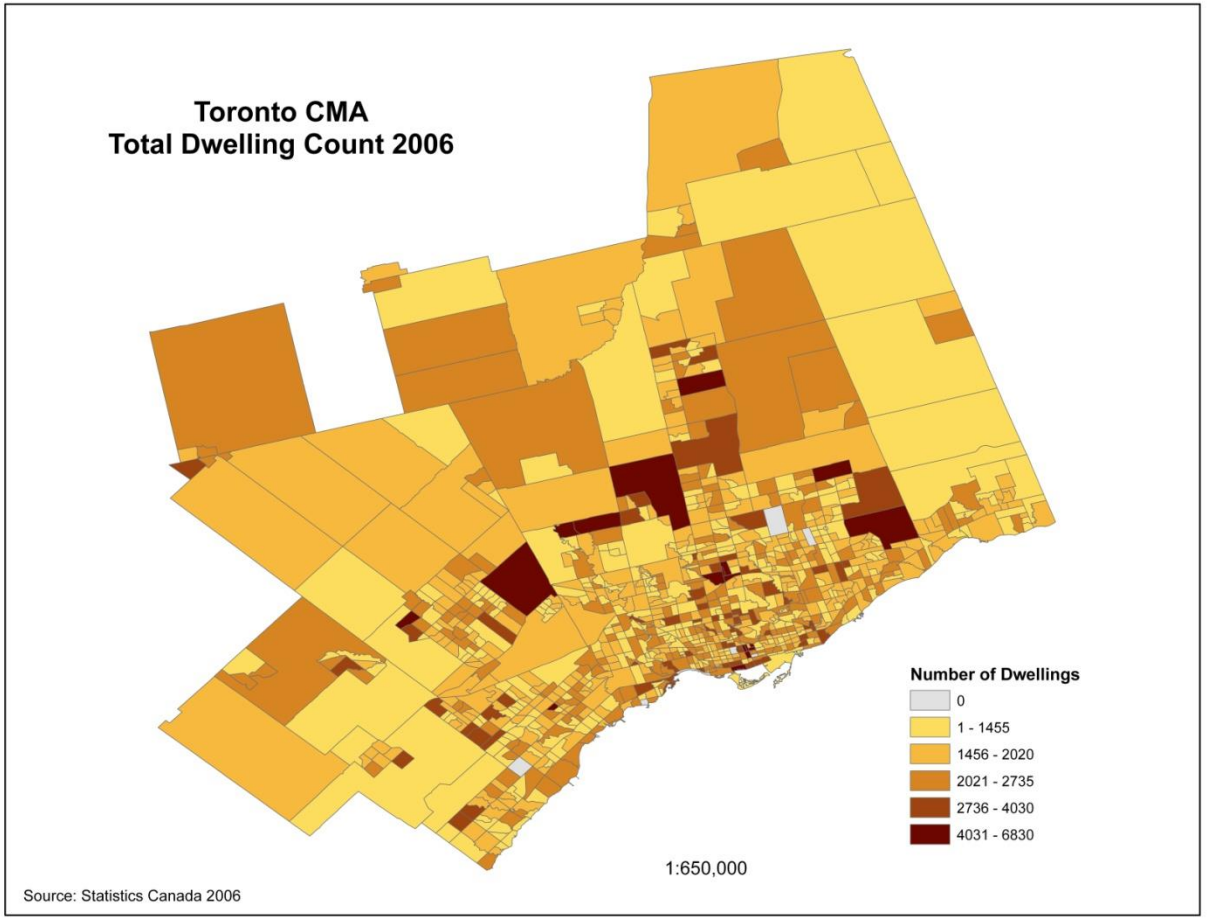
Figure 8.1 The visual variables that inherently impart a magnitude message are size, pattern texture, gray tone or color lightness, and color saturation.

Map Use, Readling Analysis Interpretation. Kimerling et al
Page 148

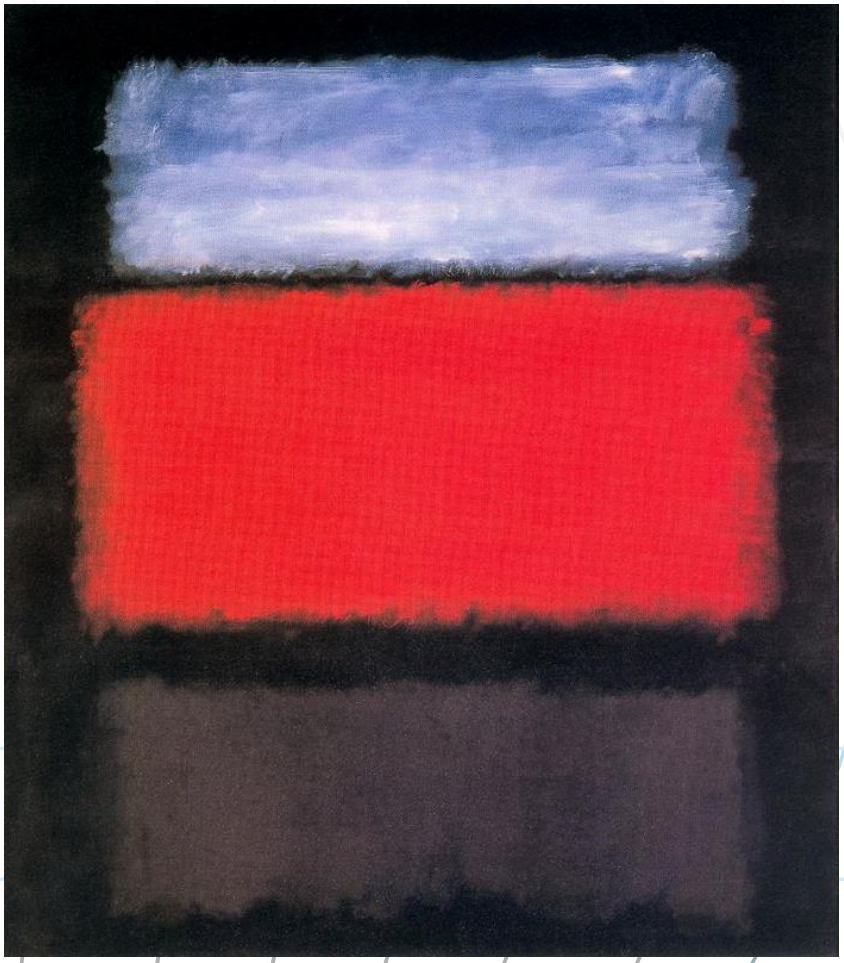
Qualitative Map



Quantitative Map



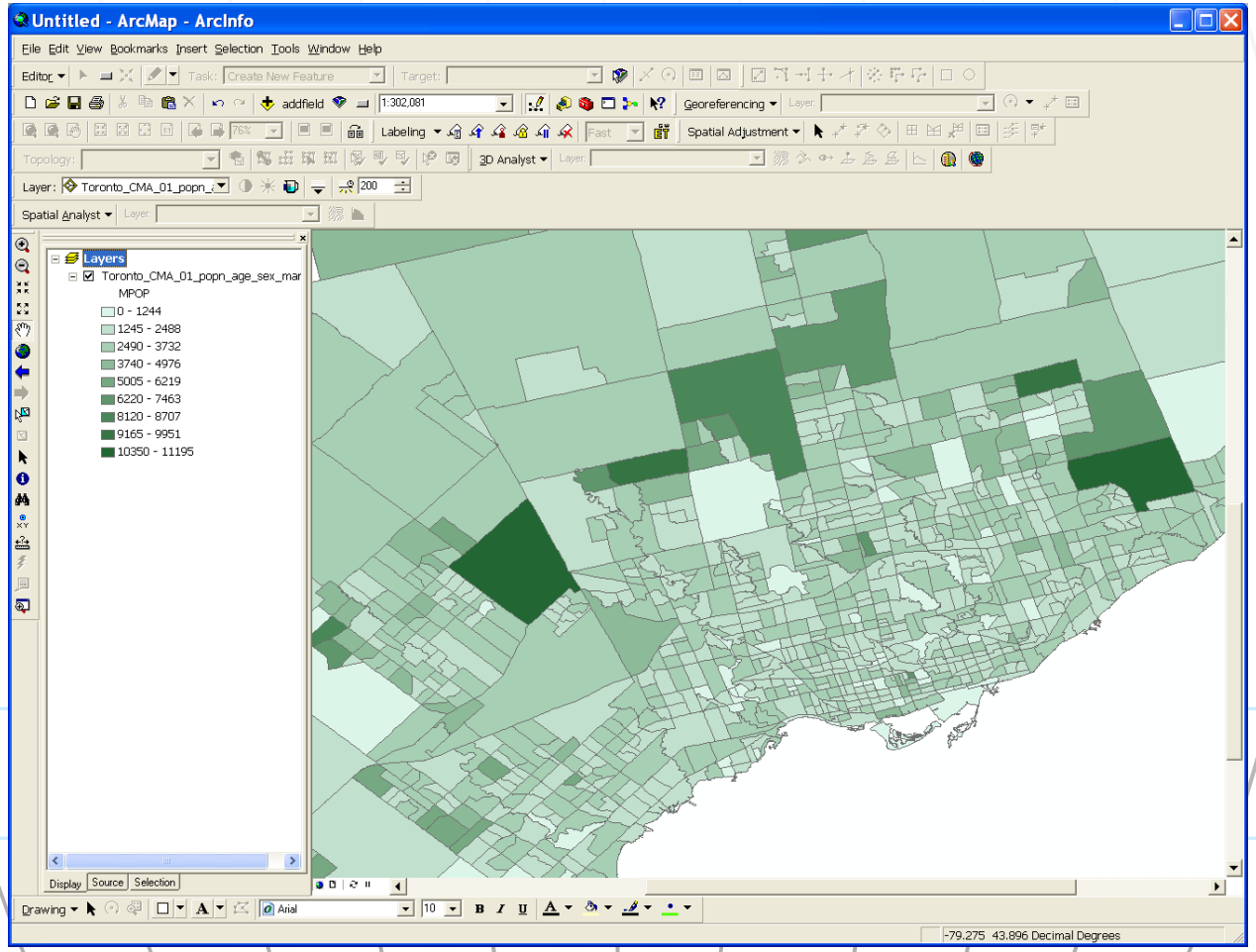
COLOUR



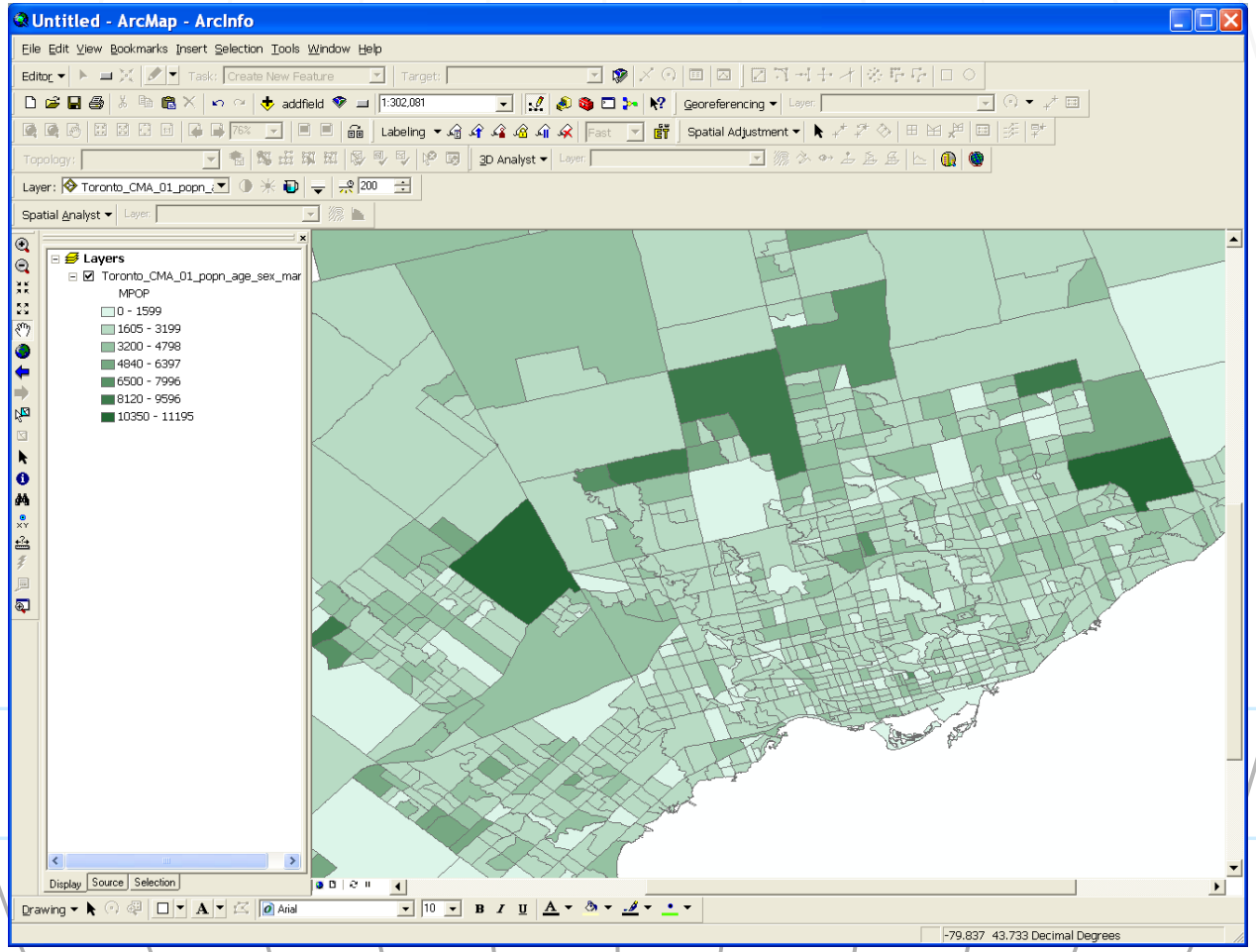
Source: http://static.colourlovers.com/uploads/2009/03/3178130243_508e7584bf.jpg

http://dailyartist.blogspot.com/2010/12/mark-rothko-september-25-1903-february.html

Colour Intervals



Colour Intervals



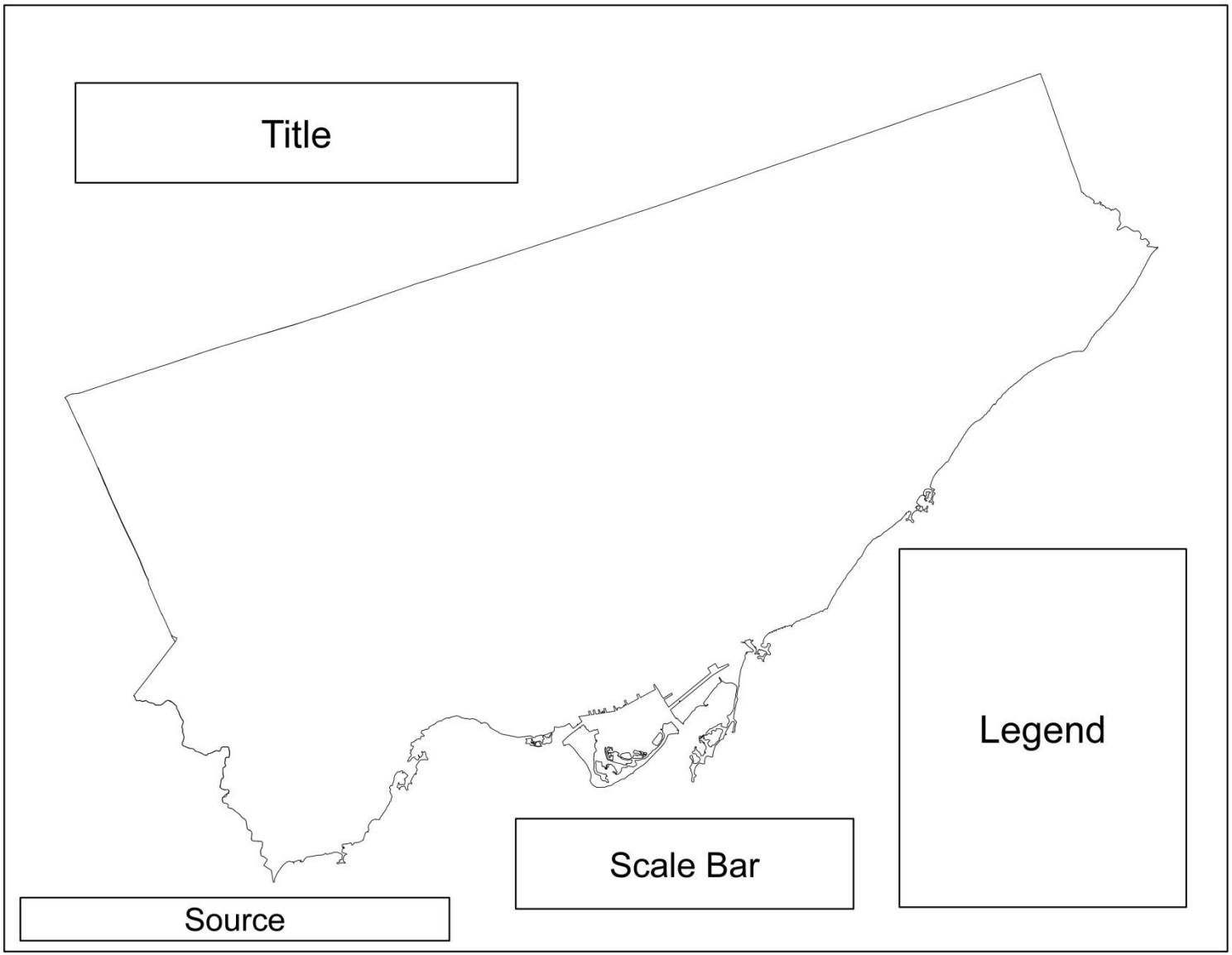
Map Layout

Use of white space

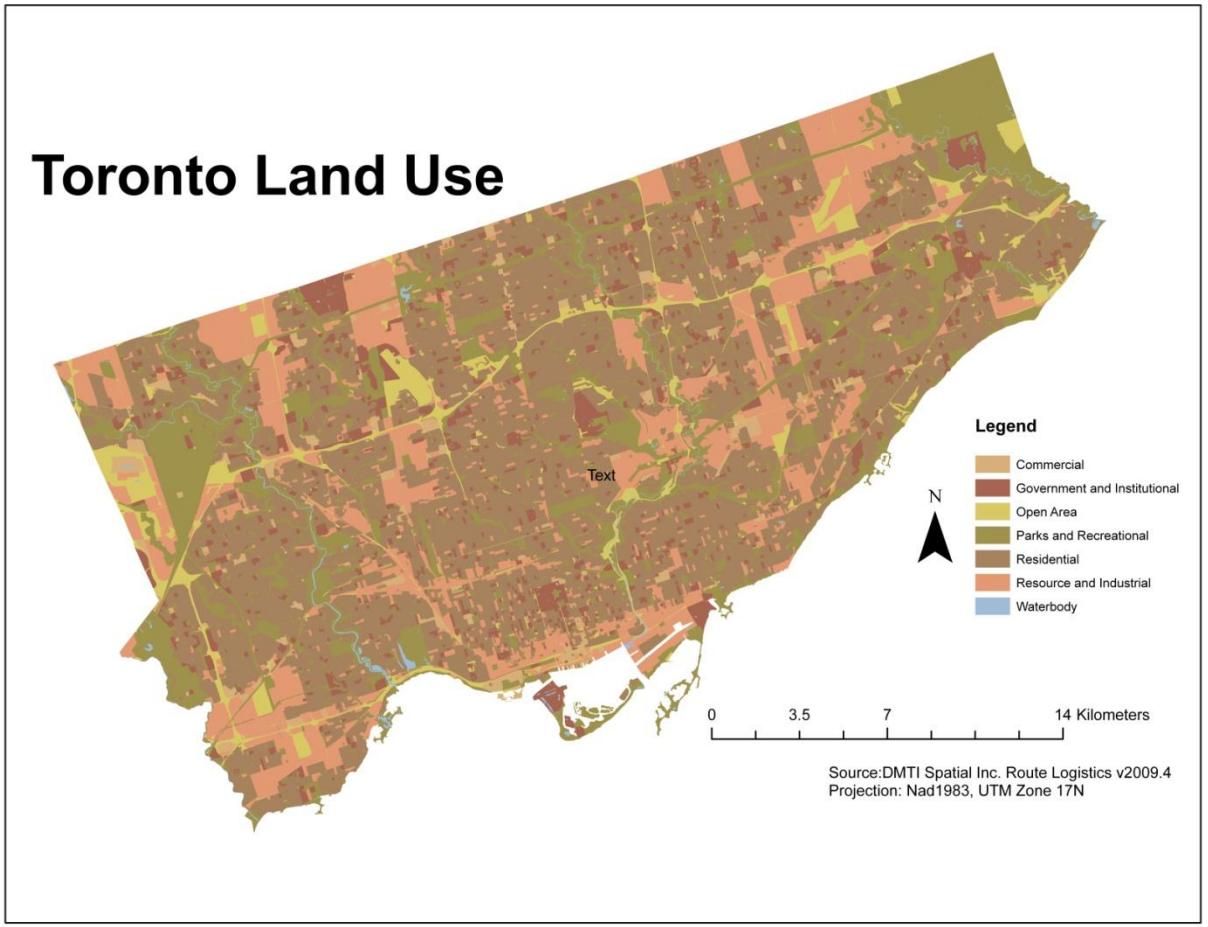
Fill white space with map title, legend, scale bar, source, projection information, north arrow

Space map elements with equal white space

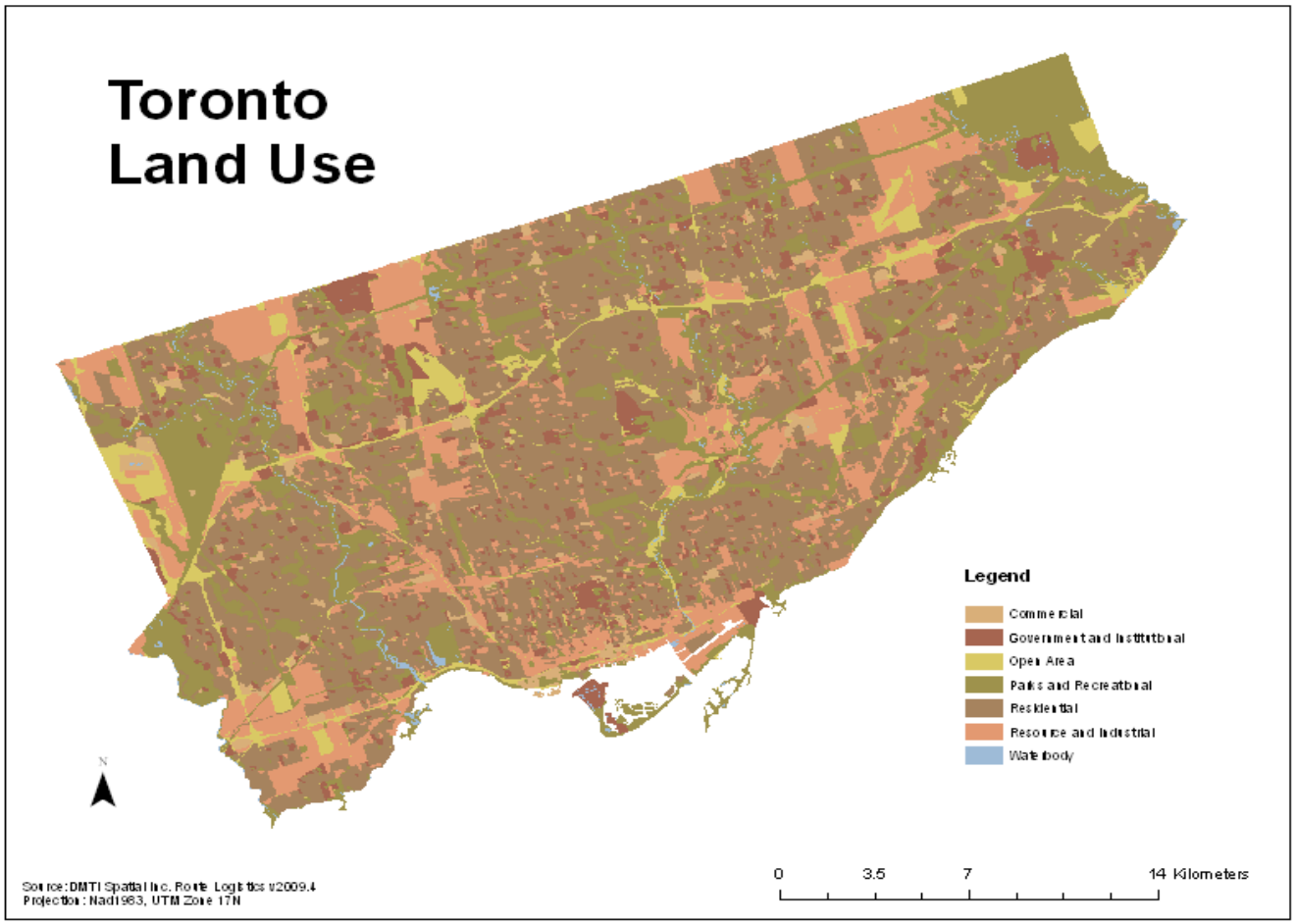
Map Layout



Map Layout


Toronto Land Use
Text
Legend
Commercial
Government and Institutional
Open Area
Parks and Recreational
Residential
Resource and Industrial
Waterbody
N
0
3.5
7
14 Kilometers
Source:DMTI Spatial Inc. Route Logistics v2009.4
Projection: Nad1983, UTM Zone 17N

Map Layout


Toronto
Land Use
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Government and Institutional
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Waterbody
N
0
3.5
7
14 Kilometers
Source: DMTI Spatial Inc. Route Logistics v2009.4
Projection: Nad1983, UTM Zone 17N

Chapter 2

Cartography and Map Production

Outline

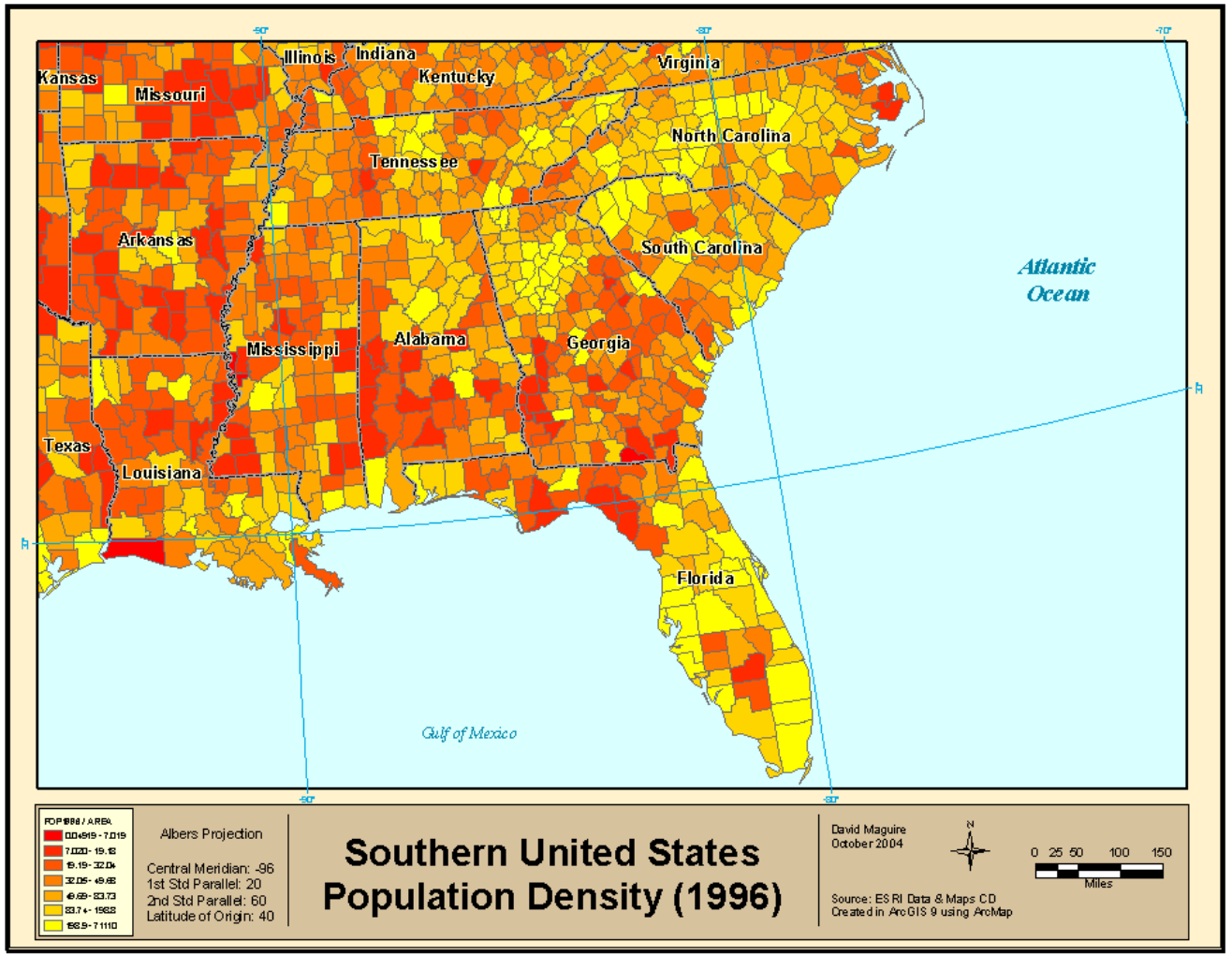
- Nature of maps and cartography
- Principles of map design
- أساسيات تصميم الخريطة
  - Composition التركيب
  - Symbolization التمثيل
- Map series مجموعات الخرائط
- Applications تطبيقات
- Conclusions الخاتمة

Maps and Cartography

- Map – ‘digital or analog output from a GIS showing information using well established cartographic conventions’

Characteristics of Map

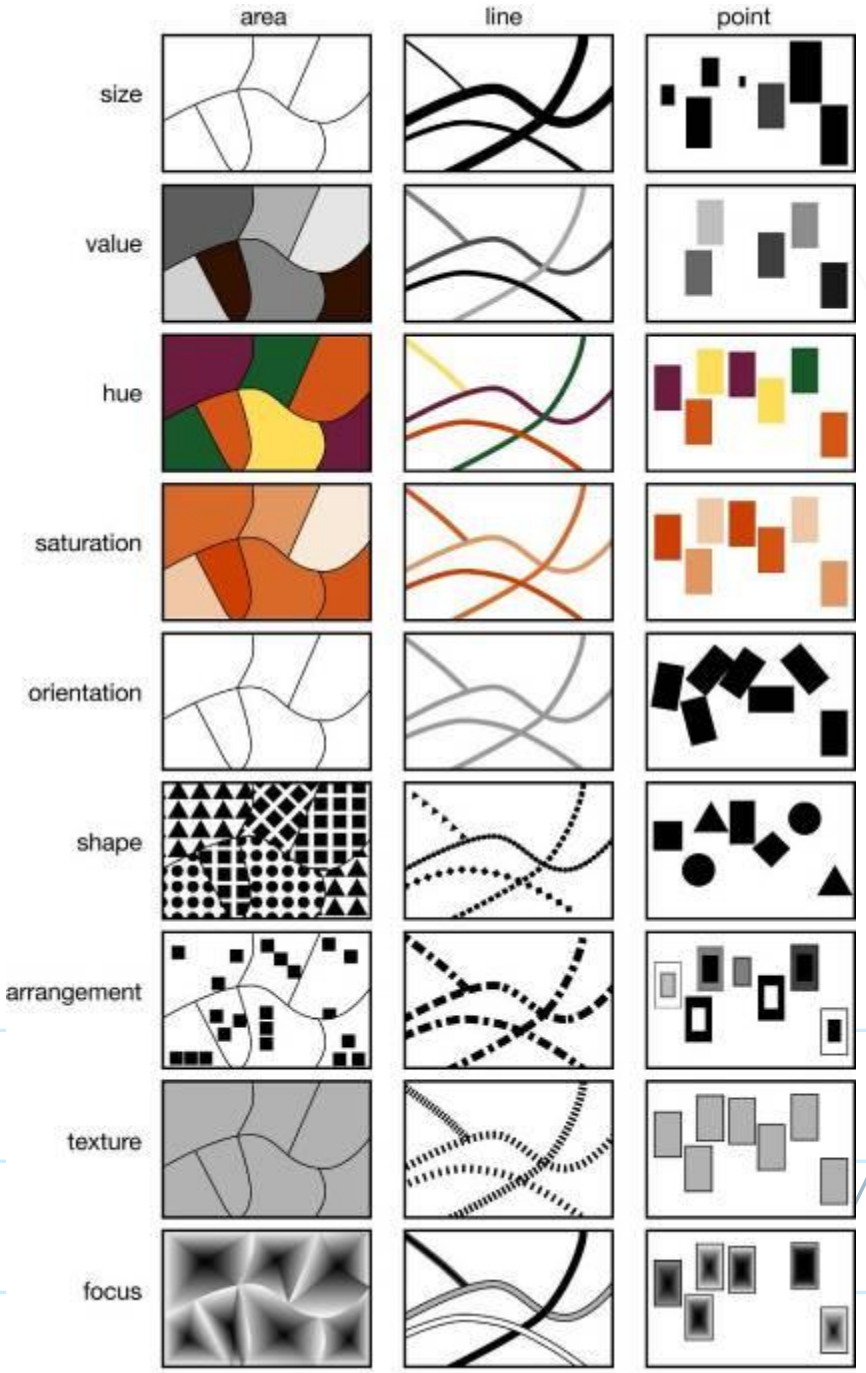
- Two main types نوعين من الخرائط
  - Topographic خرائط طبوغرافية
  - Thematic خرائط موضوعية


Kansas
Missouri
Illinois
Indiana
Kentucky
Virginia
North Carolina
Tennessee
Arkansas
South Carolina
Atlantic Ocean
Mississippi
Alabama
Georgia
Texas
Louisiana
Florida
Gulf of Mexico
Albers Projection
Central Meridian: -96
1st Std Parallel: 20
2nd Std Parallel: 60
Latitude of Origin: 40
Southern United States
Population Density (1996)
David Maguire
October 2004
Source: ESRI Data & Maps CD
Created in ArcGIS 9 using ArcMap
0 25 50 100 150
Miles

Limitations of Paper Maps

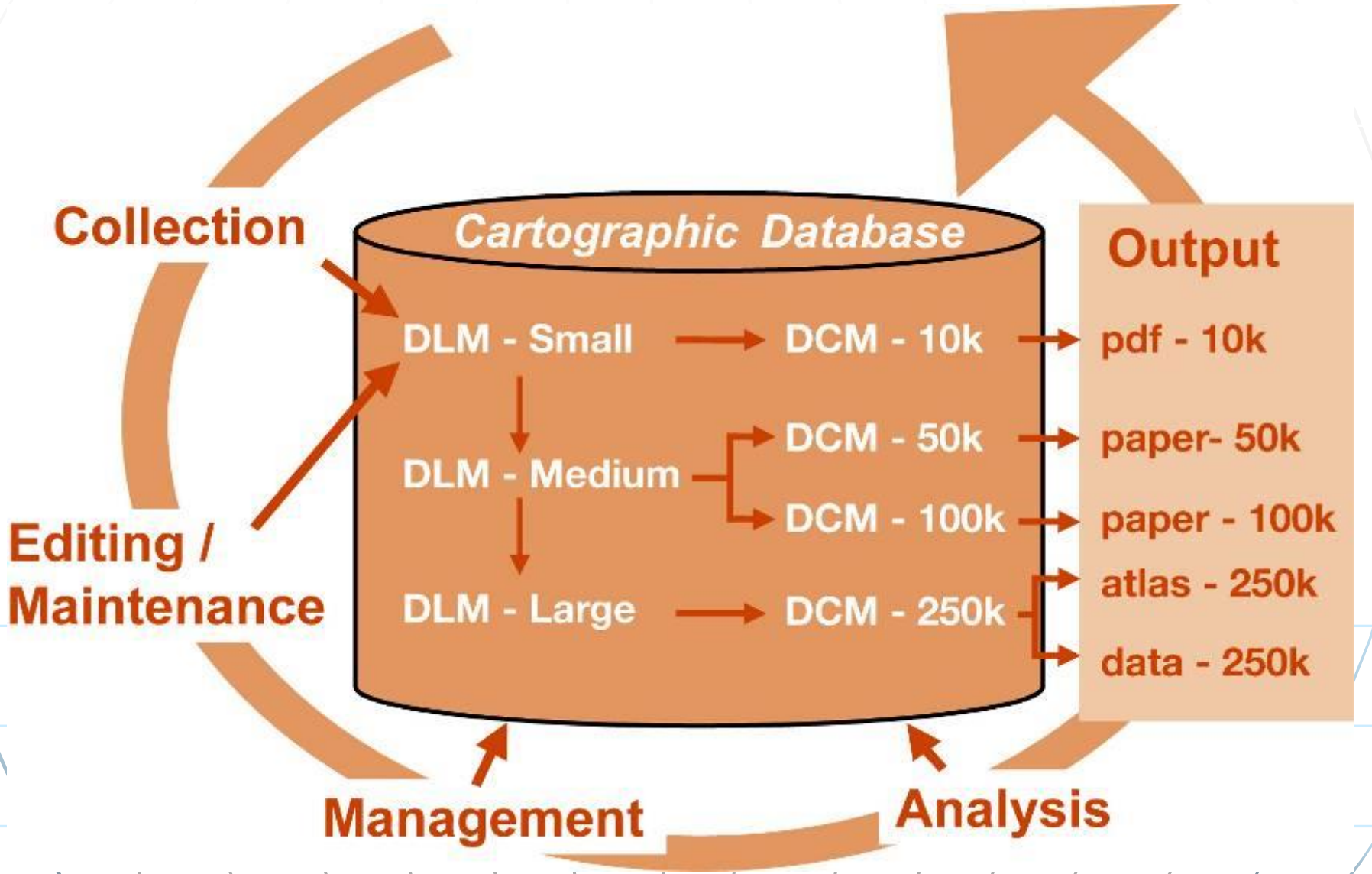
- Fixed scale مقياس رسم محدد
- Fixed extent امتداد محدد
- Static view
- Flat and hence limited for 3D visualization
- Only presents ‘complete’ world view
- Map producer-centric

رموز الخرائط
Graphic Symbols



Map Production System Information Flows

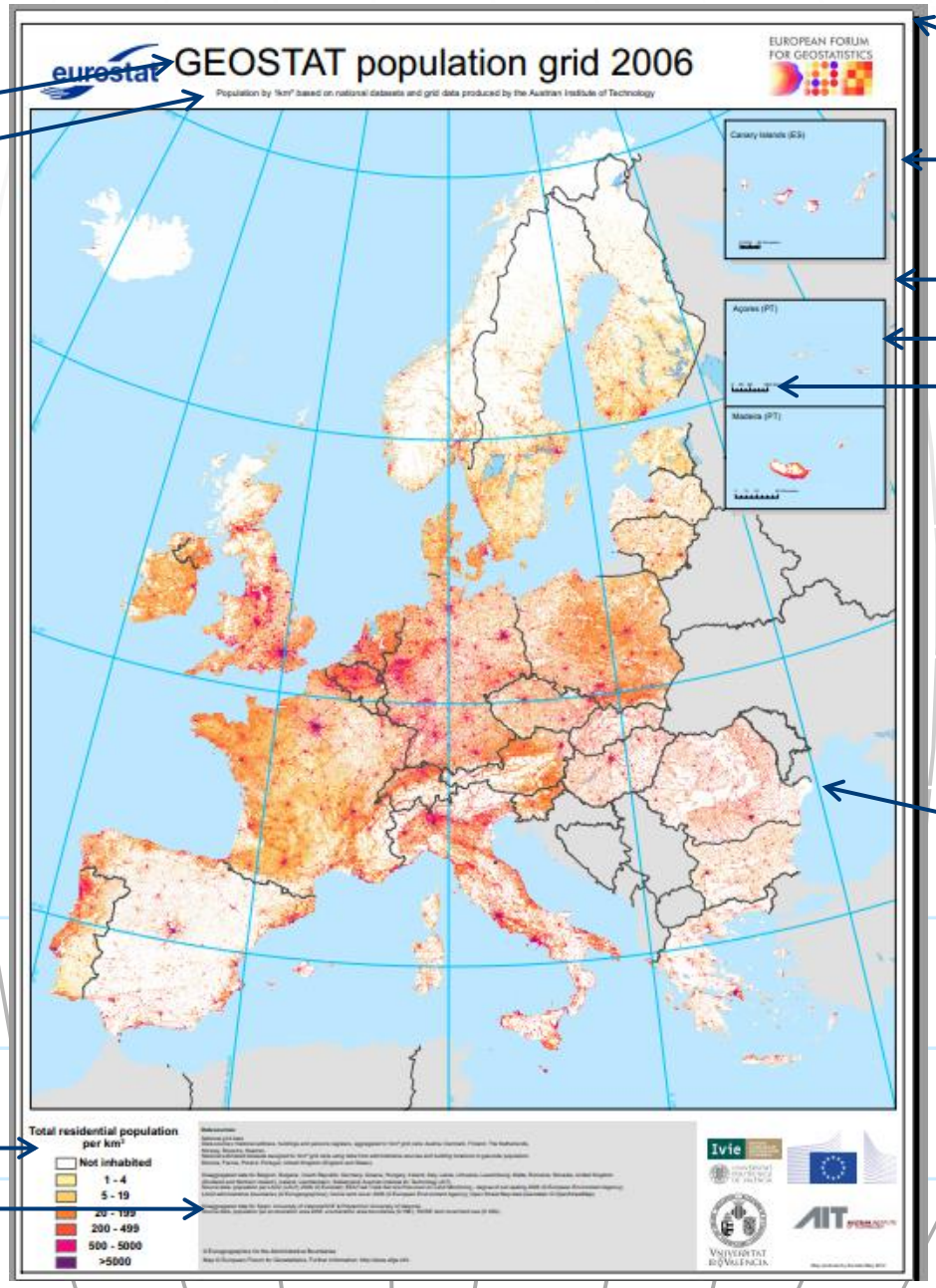
خطوط أنسياب معلومات نظام أنتاج الخرائط



Chapter 3

عناصر الخريطة
MAP ELEMENTS

MAP ELEMENTS



العنوان Titel

العنوان الفرعي Subtitel

حافة الورقة
Edge of paper

Frame line
خط الاطار

Neat line
خط اطار داخلي

خريطة تفصيلية Inset

مقياس الرسمScale

توجيه الخريطة
(شبكة احداثيات
Orientation

مفتاح الخريطة Legend

مصدر البيانات Data source

Map elements

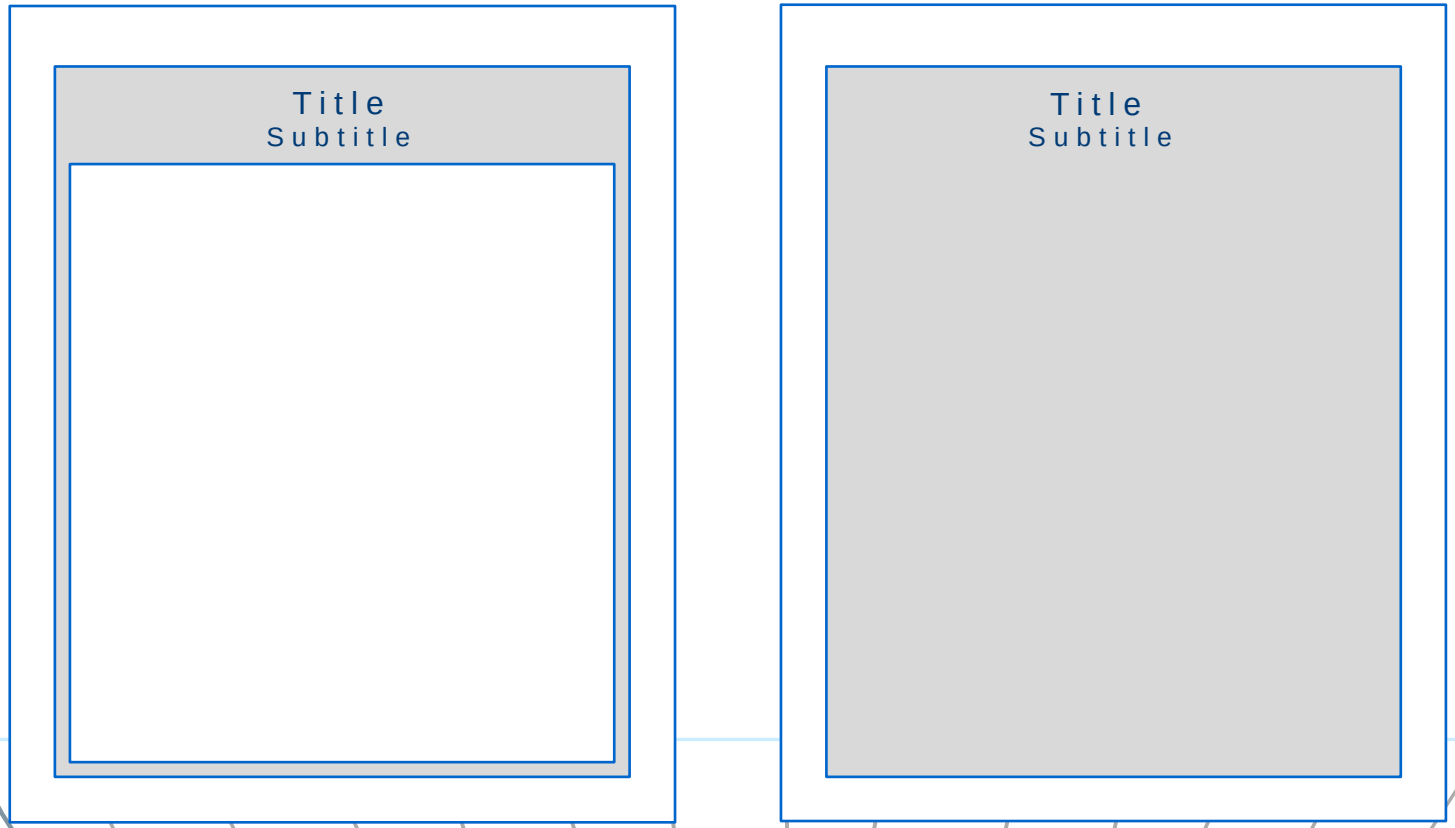
- **The most maps are created from the common set of elements:**

1. Frame
2. Mapped area
3. Inset map
4. Title and subtitle
5. Legend
6. Data source
7. Scale
8. Orientation
9. Lat & Long

Source: Solcum et al, „Thematic cartography and Geovisualization 2007

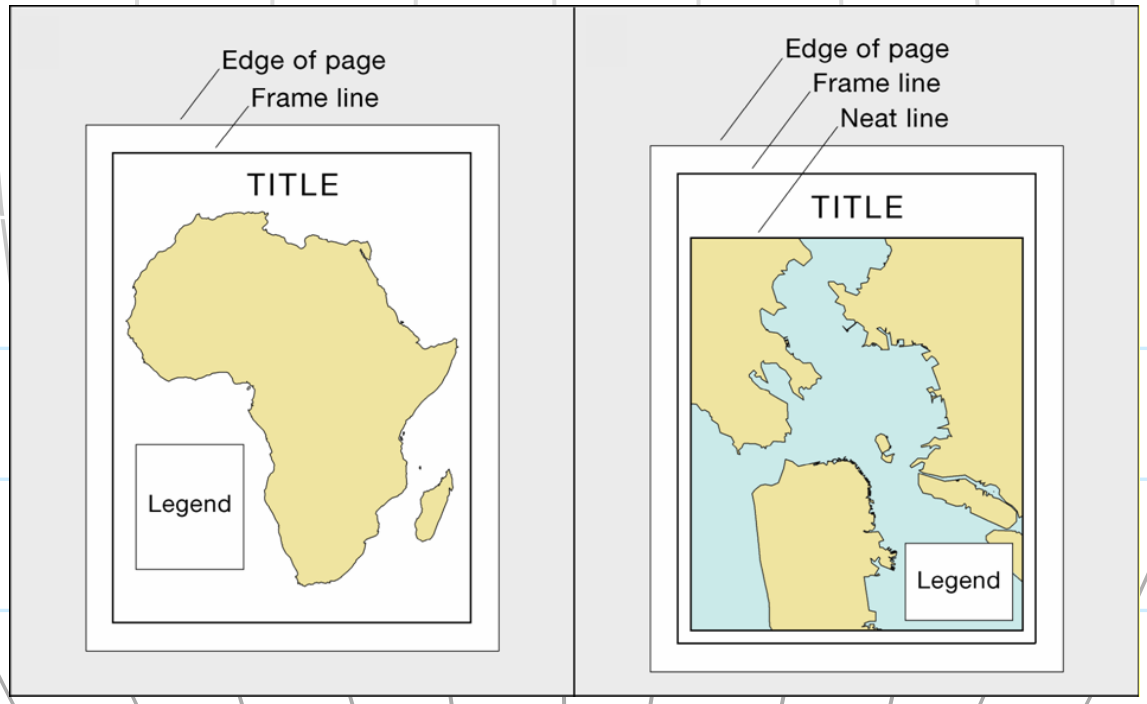
1- Frame

- **Help organise the map content and define its extent**
- **Frame line is used in most cases**
- **Neatline is used mainly when mapped area needs to be cropped**



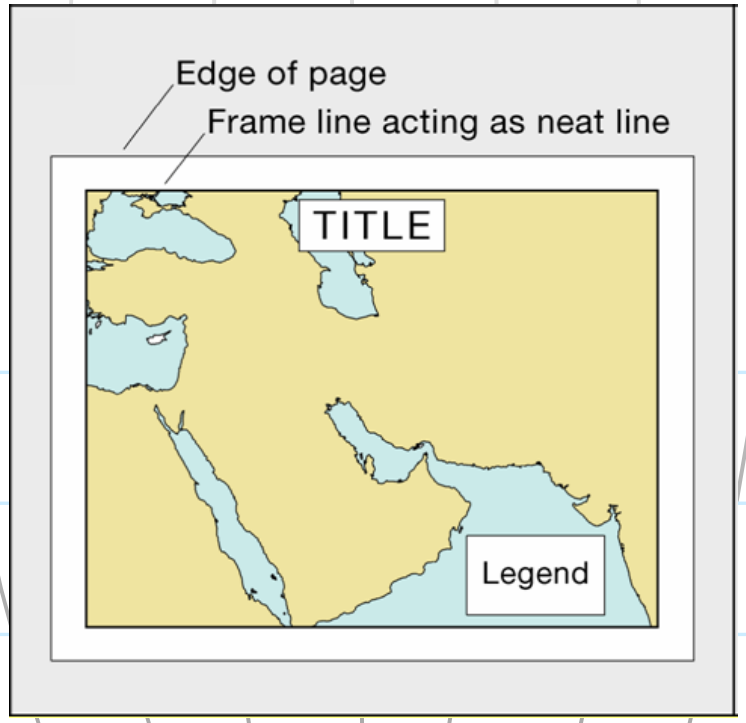
FRAME LINE and NEAT LINE

- A Frame Line should be used in most situations
- A Neat Line is used when the mapped area needs to be cropped



FRAME LINE and NEAT LINE

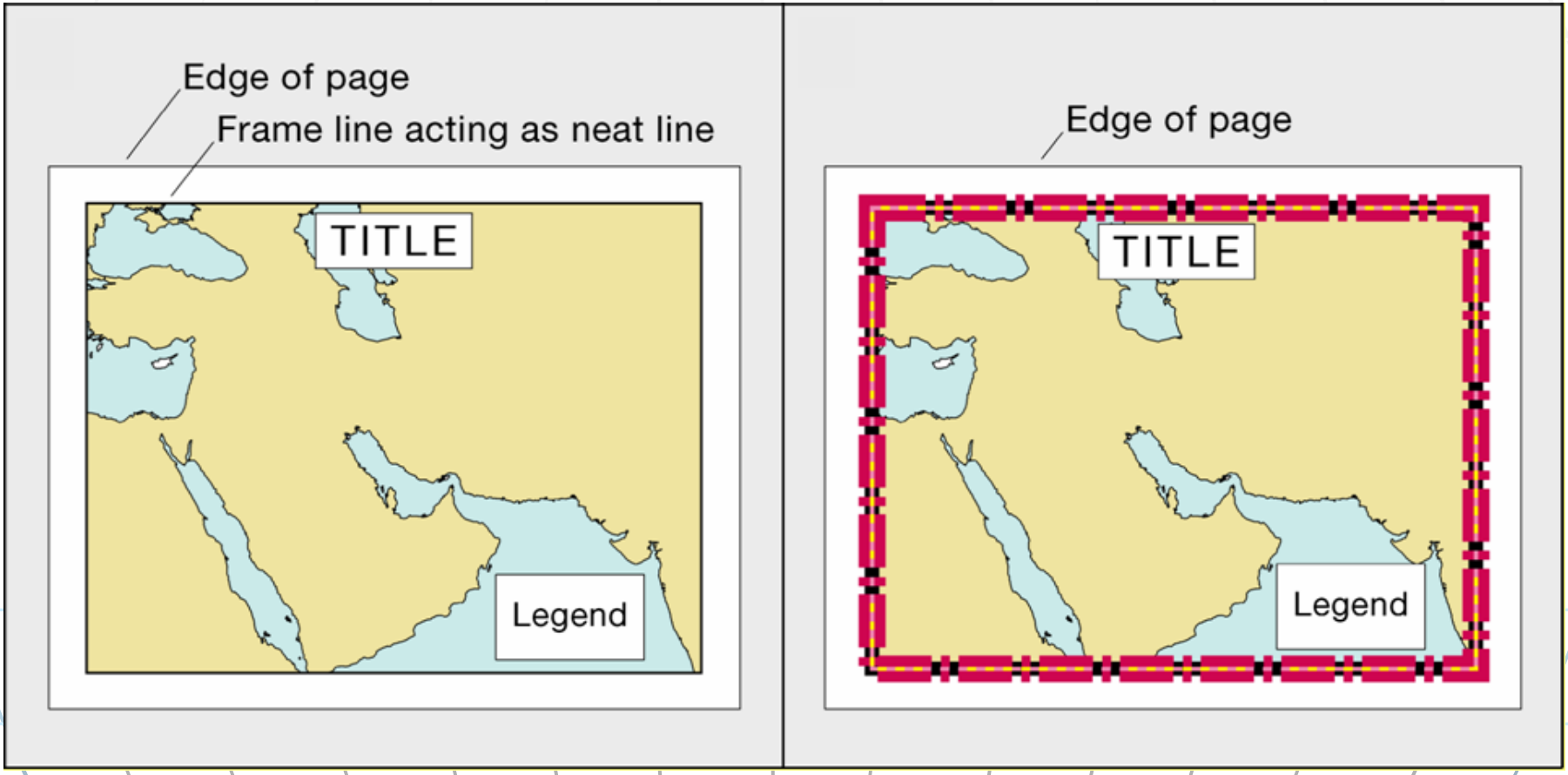
- In certain cases, a frame line can also act as a neat line
  - Enclosing all map elements *and* cropping the mapped area



FRAME LINE and NEAT LINE

- The style of these lines should be subtle
  - A single, thin, black line should be used in most cases
  - Slightly thicker lines are appropriate when working with larger formats, such as wall maps and posters
  - These lines should focus attention not on themselves, but on what is within them

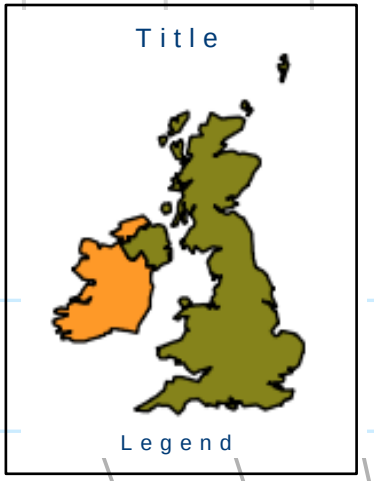
FRAME LINE and NEAT LINE

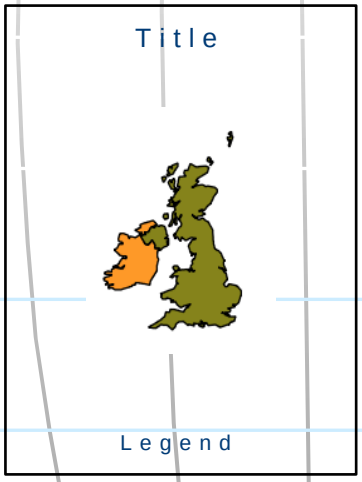


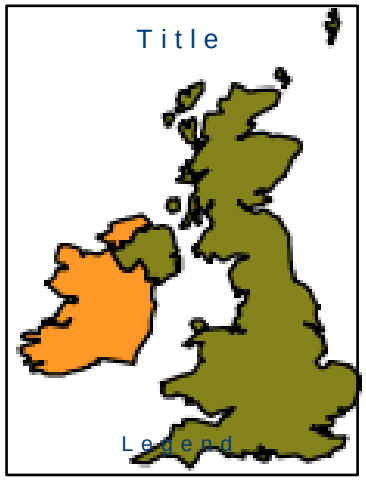
Note: The edge of the page will not be shown on most subsequent maps

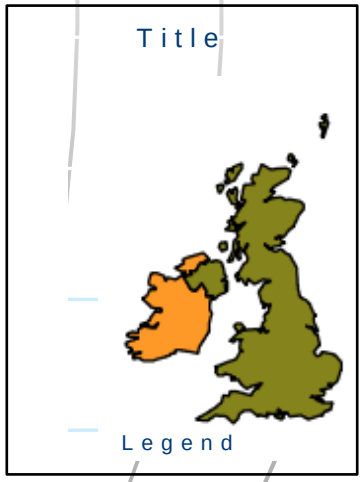
2- Mapped area

- Is the area on the earth which will be represented on the map
- Mapped area is represented as large as possible
- Not too close to the frame or neat line and leaving room for other elements
- Should be visually centred





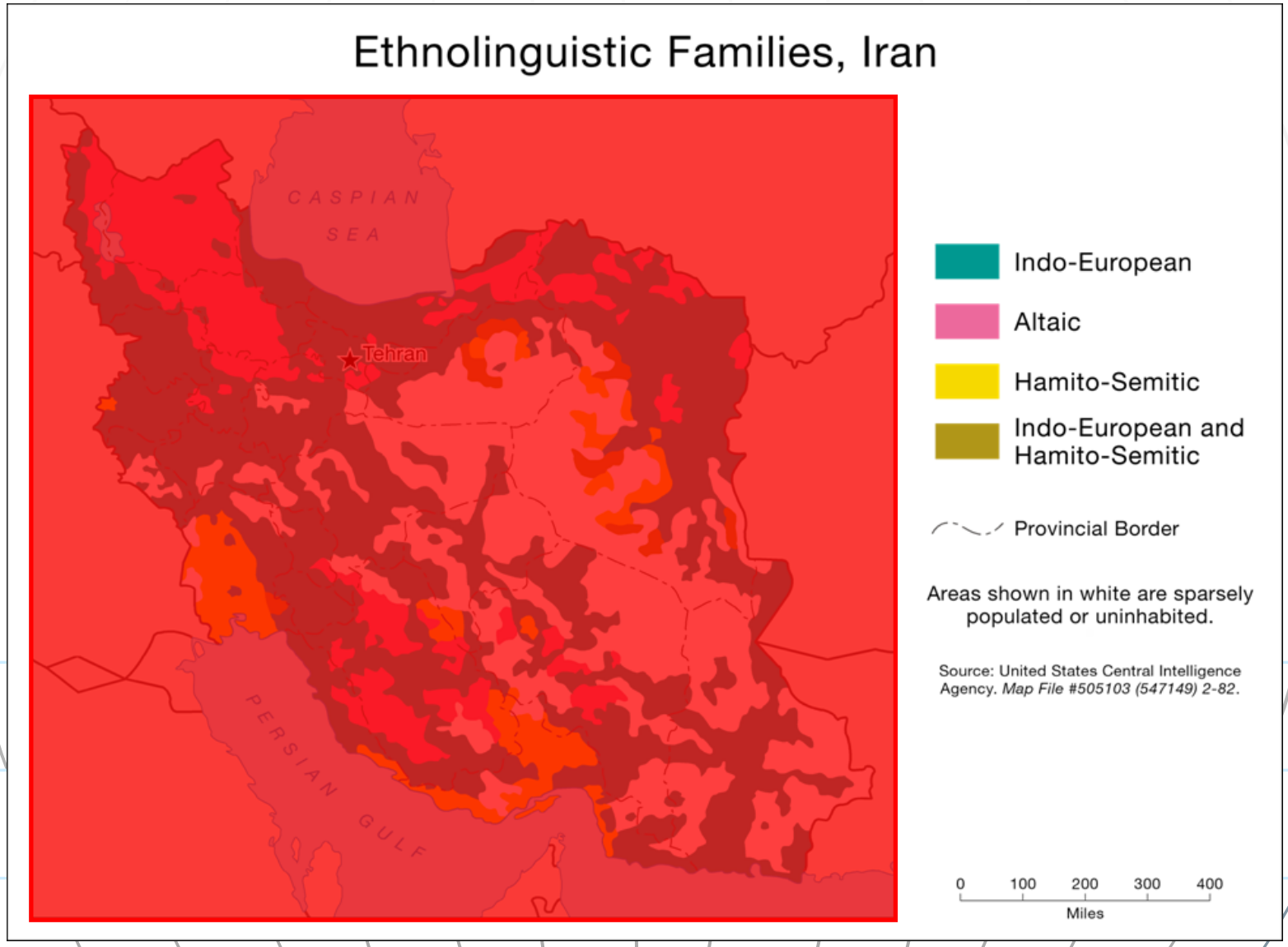




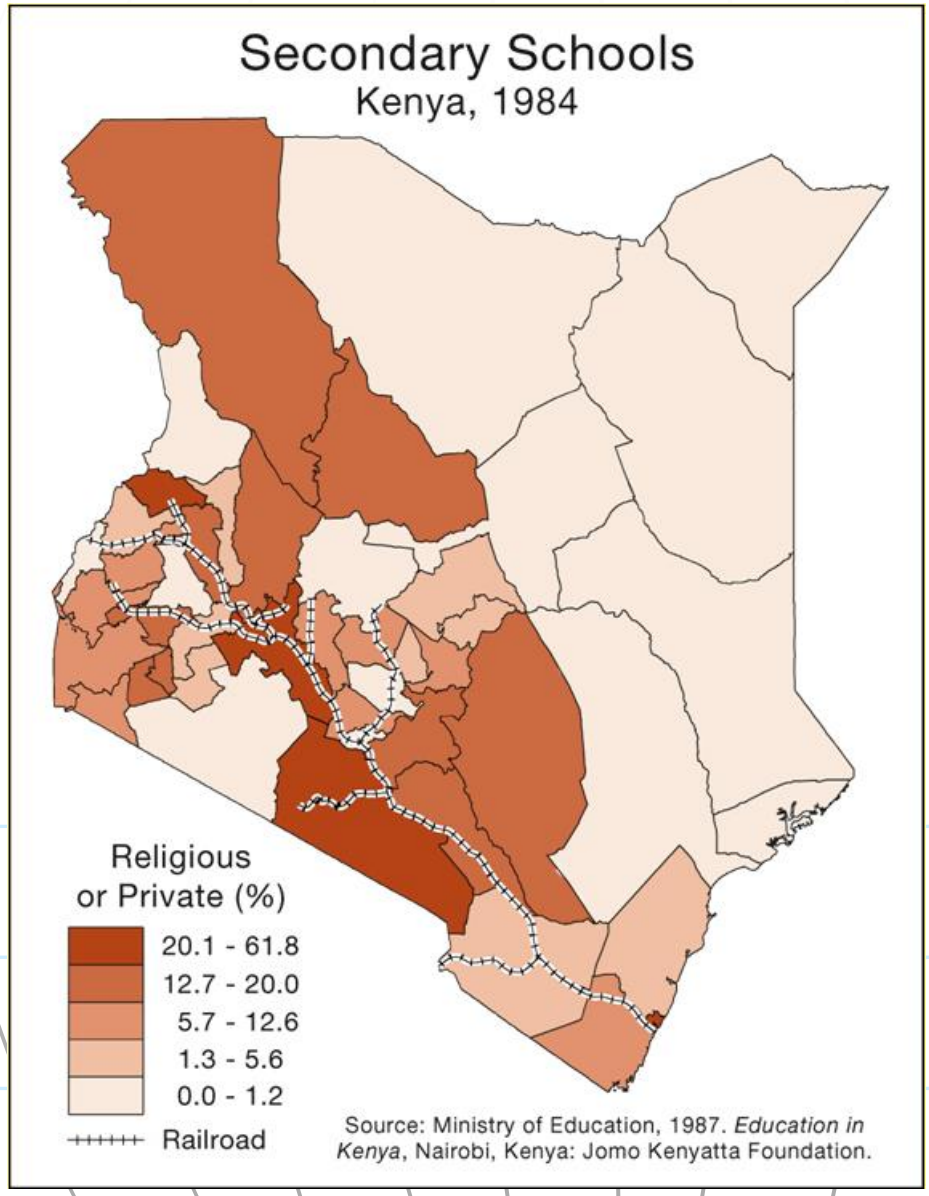
MAPPED AREA

- The region of Earth being represented
- Consists of Thematic Symbols
  - Thematic Symbols directly represent the map's theme
  - Are visually dominant
- Can also include Base Information
  - Base Information provides a geographic frame of reference for the theme
  - Is subdued

MAPPED AREA


Ethnolinguistic Families, Iran
CASPIAN SEA
Tehran
PERSIAN GULF
Indo-European
Altaic
Hamito-Semitic
Indo-European and Hamito-Semitic
Provincial Border
Areas shown in white are sparsely populated or uninhabited.
Source: United States Central Intelligence Agency. Map File #505103 (547149) 2-82.
0 100 200 300 400
Miles

MAPPED AREA



Thematic Symbols:
Shaded Polygons

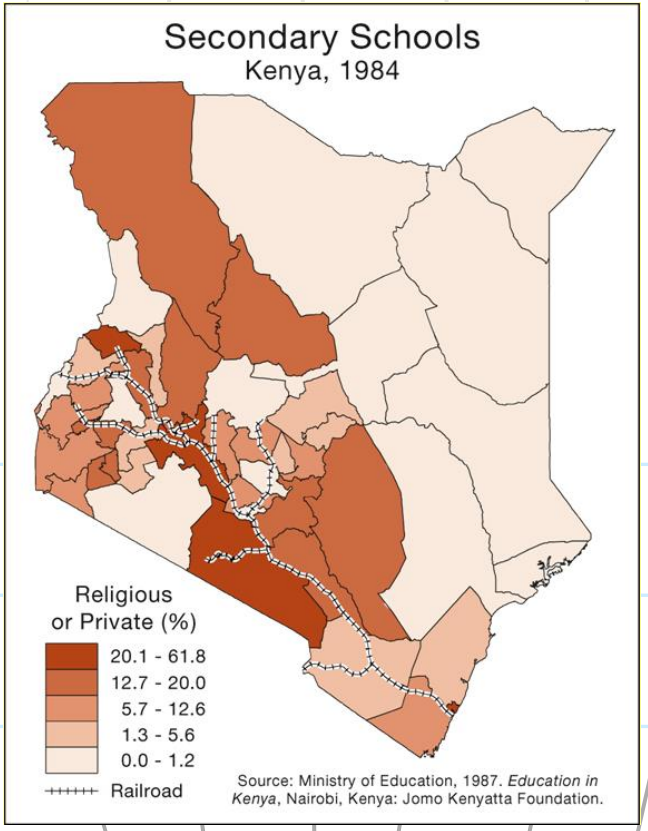
Base Information:
Railroads

MAPPED AREA

- There are two varieties of mapped area, distinguished by how they represent the geographic region of interest
  - Floating
  - Cropped

MAPPED AREA

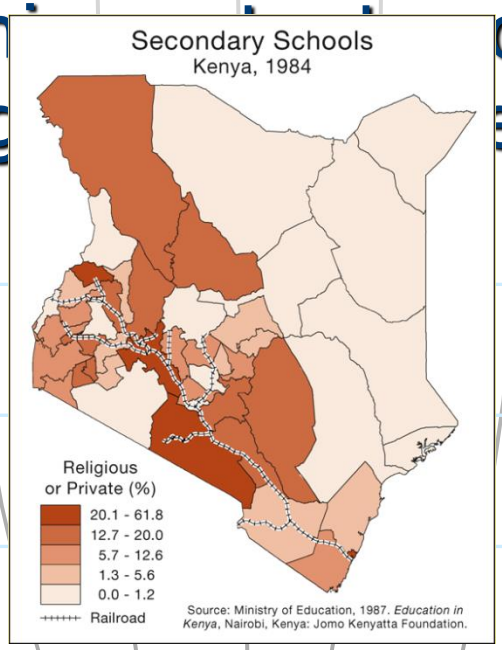
- Floating Mapped Area
  - Region of interest is disconnected from neighboring regions



Closed Form:
Bounding Polygon

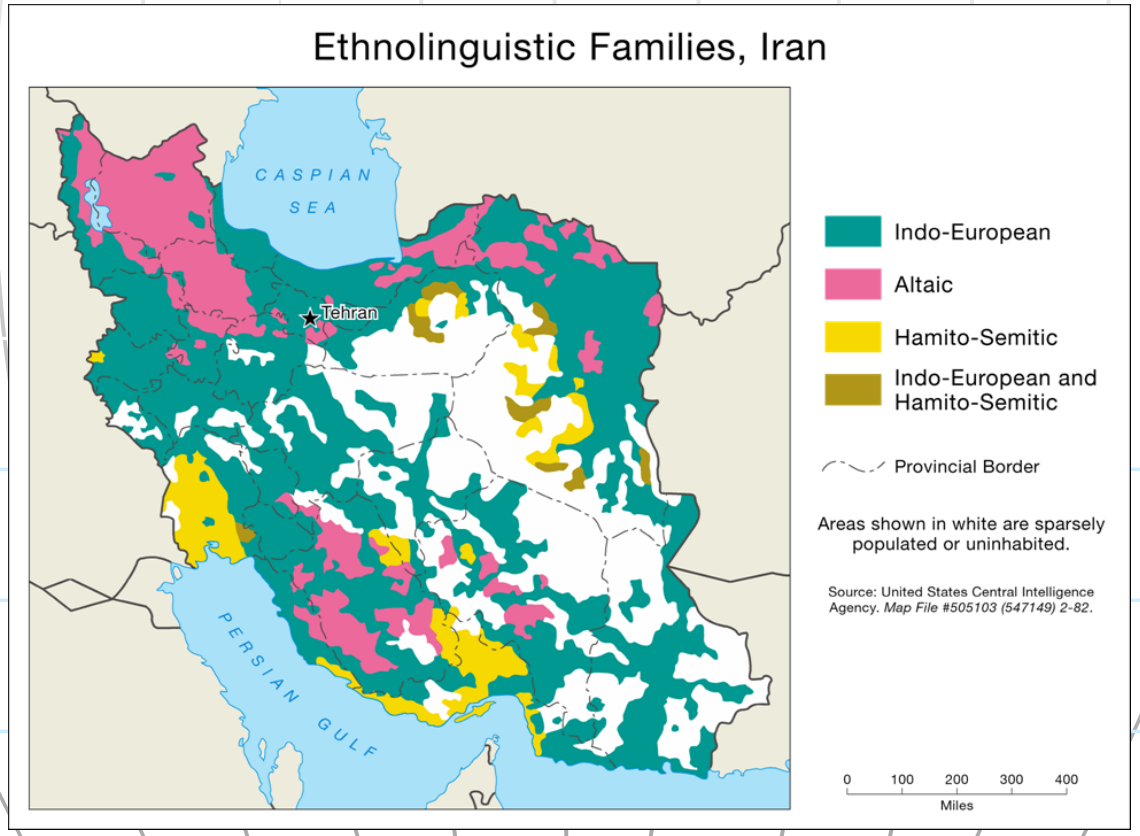
MAPPED AREA

- Floating Mapped Area (cont.)
  - Produces available space that often eases the placement of other map elements
  - Removes the region from its geograph ossibly confusing er



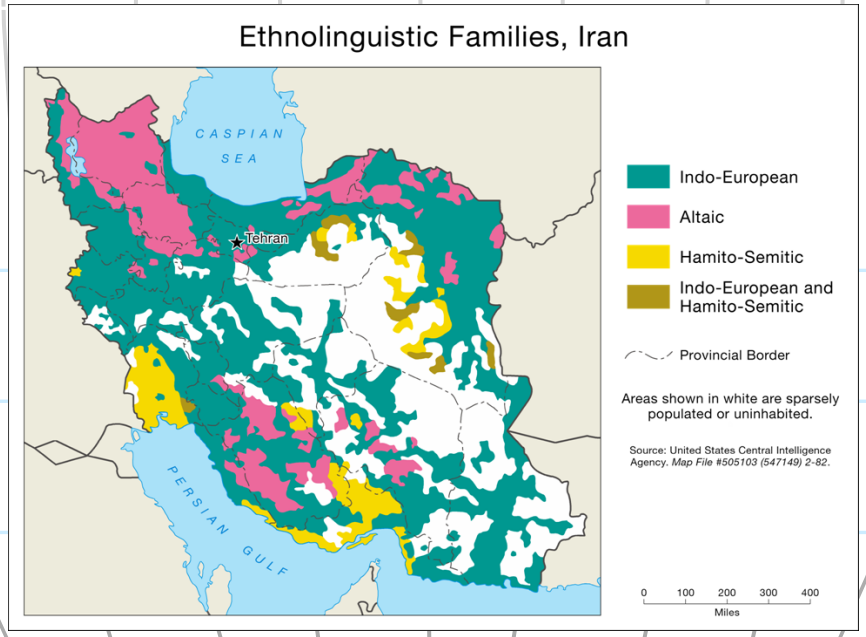
MAPPED AREA

- Cropped Mapped Area
  - Represents the region of interest within its geographic context



MAPPED AREA

- Cropped Mapped Area (cont.)
  - More realistic, less abstract
  - Can make the placement of other map elements more difficult due to a lack of available space

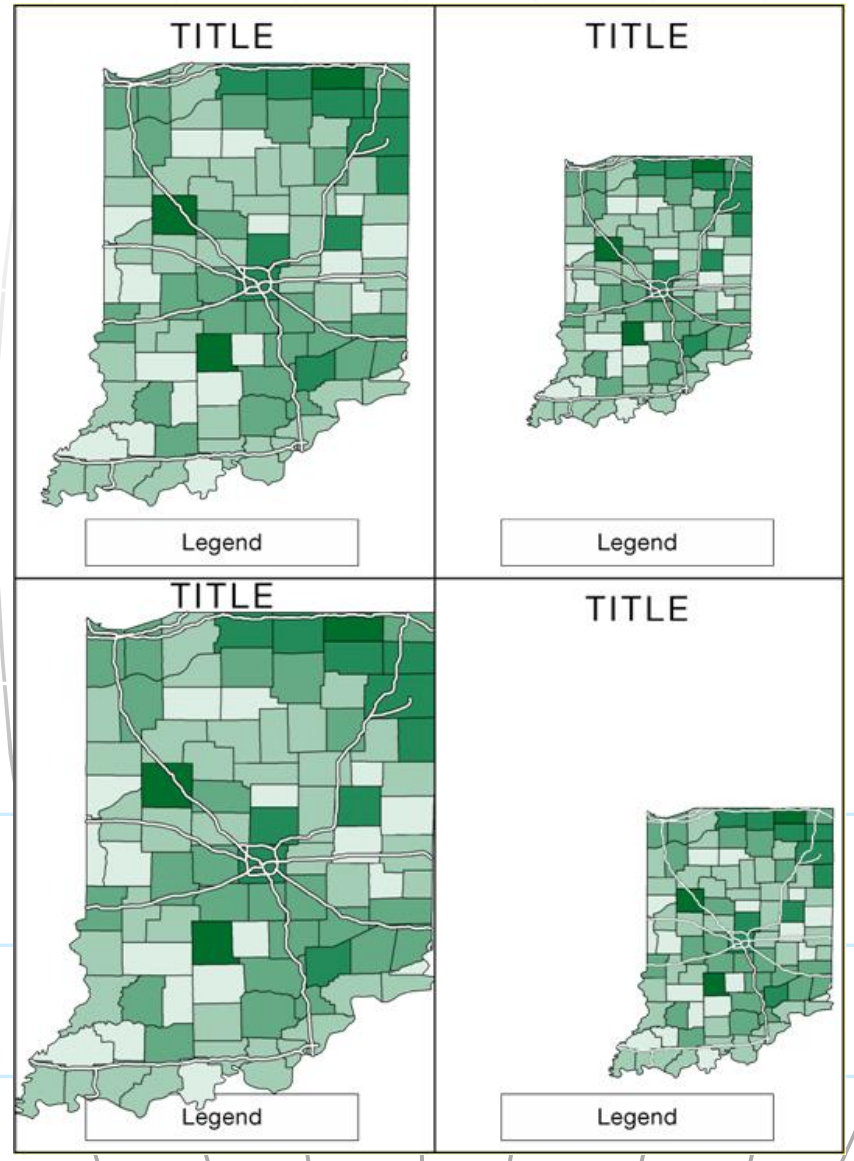


MAPPED AREA

- Make the mapped area as large as possible within the available space
  - Without being "too close" to the frame line
  - While leaving ample room for the remaining map elements
- Maximum area is important
  - The mapped area—thematic symbols in particular—is instrumental in communicating the map's information

MAPPED AREA

Appropriately Sized



MAPPED AREA

- Try to visually center the mapped area both horizontally (side-to-side) and vertically (top-to-bottom)
  - Within the available space, as defined by the frame line
- This will not always result in an appropriate placement
  - But should be tried first

3- Inset

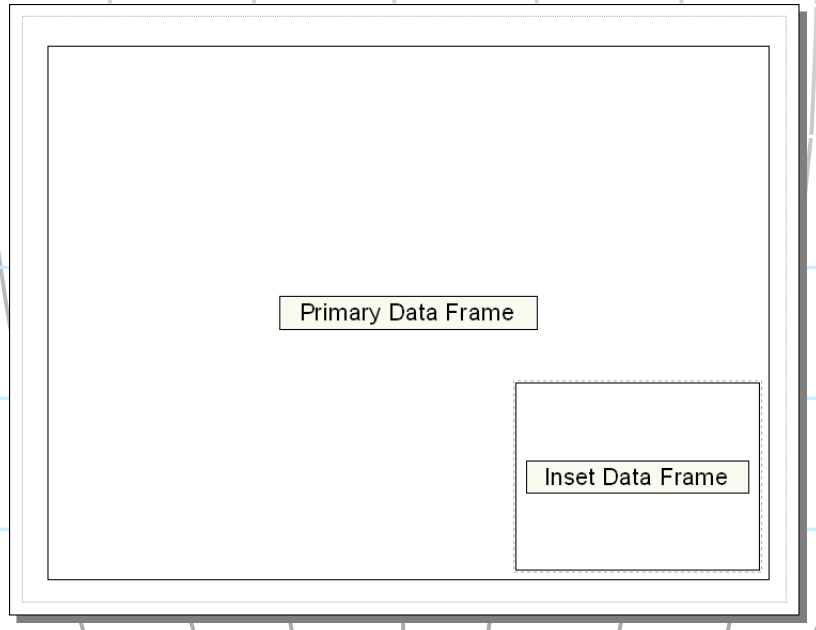
- Can serve different purposes:
  - To enlarge important areas
  - To show related topics to the main theme
  - To show areas which can not be showed on the main scale
  - Locator inset shows primary mapped area in relation to larger and more easily recognisable area

Source: UK Ordinar Survey, http://www.globalmapping.uk.com/earth5.asp

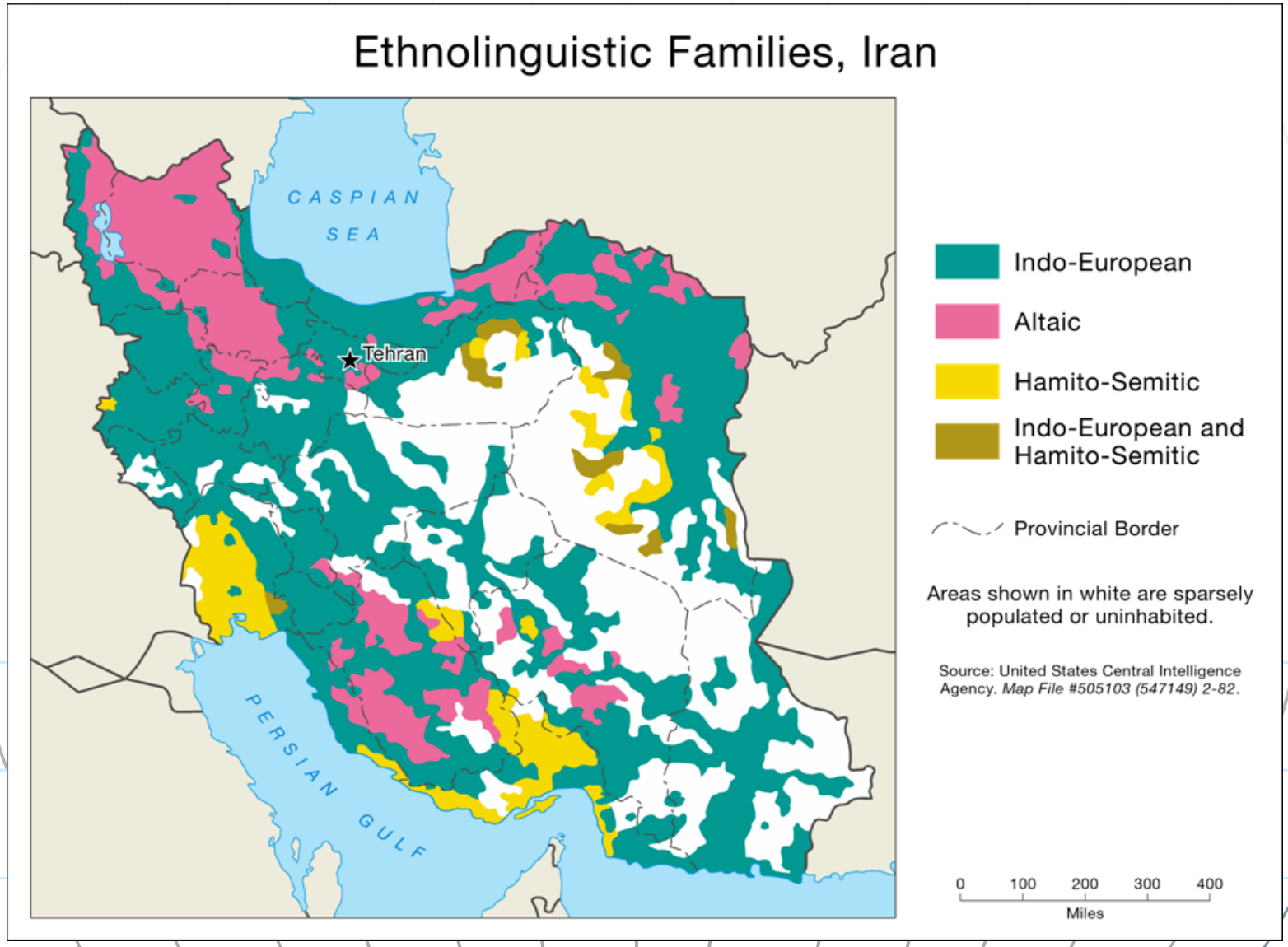
Source: Canadian national mapping agency
http://atlas.nrcan.gc.ca/site/english/dataservices/wallmaps.html

INSET

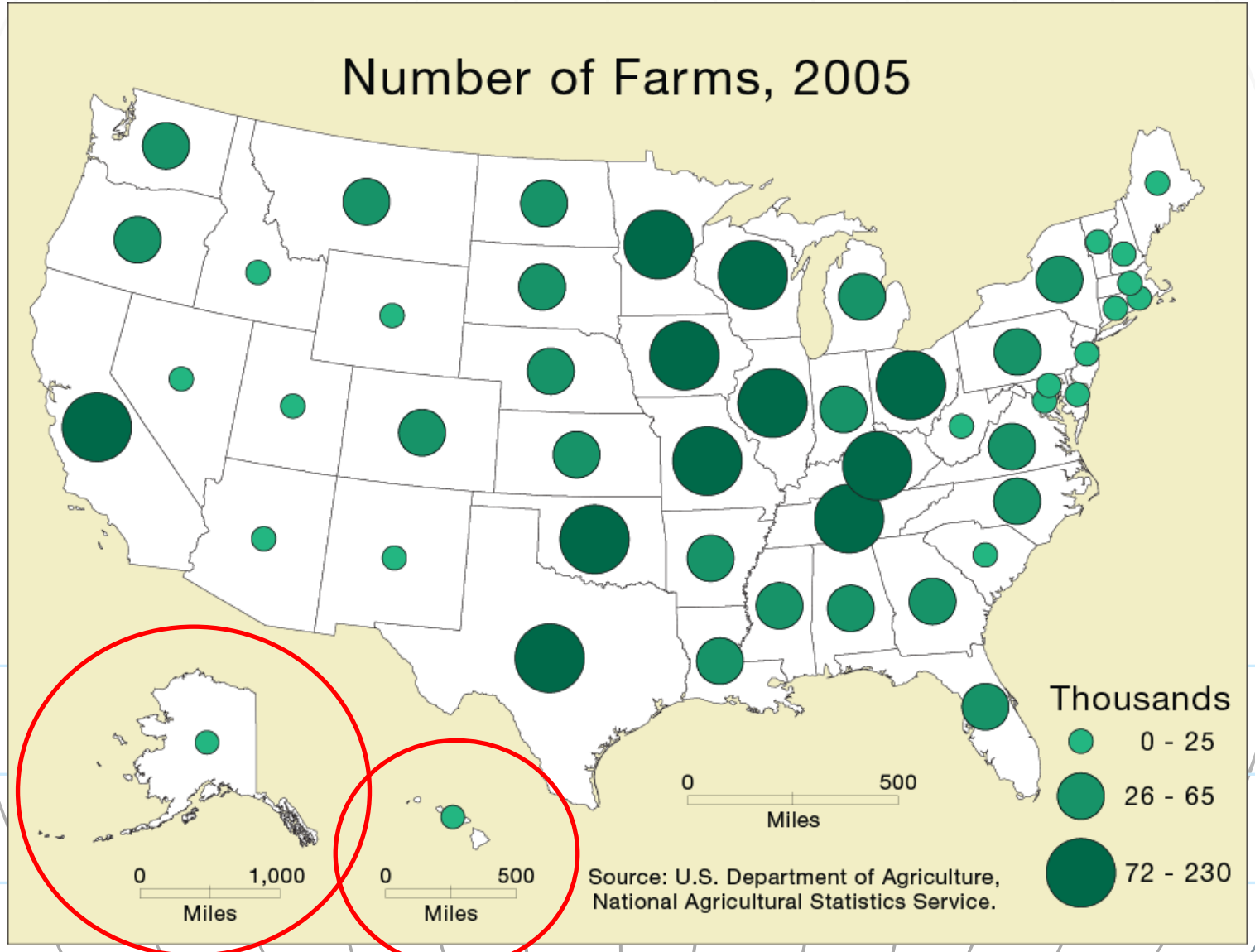
- A smaller map included within the context of a larger map
  - Can serve several purposes
  - In the world of ArcGIS, the inset is usually a separate data frame



INSET

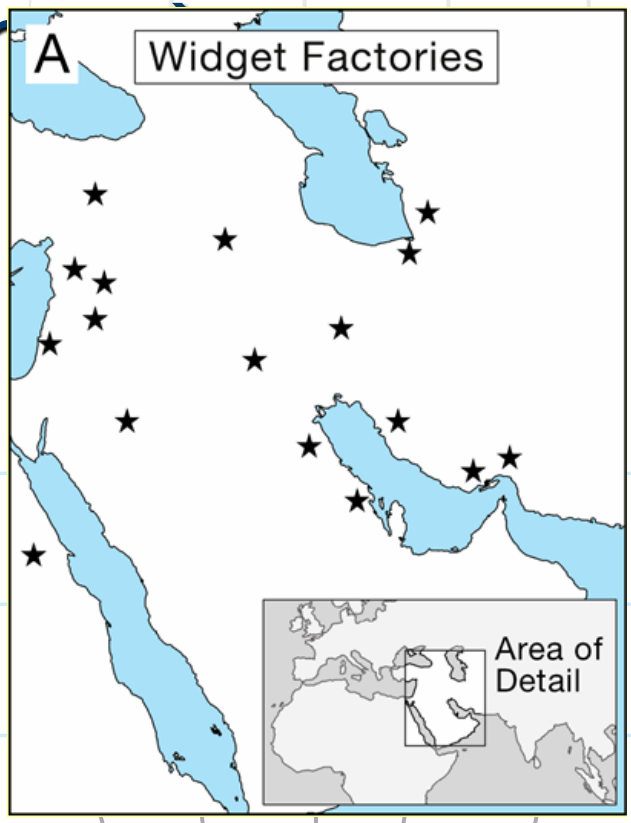

Ethnolinguistic Families, Iran
CASPIAN SEA
Tehran
PERSIAN GULF
Indo-European
Altaic
Hamito-Semitic
Indo-European and Hamito-Semitic
Provincial Border
Areas shown in white are sparsely populated or uninhabited.
Source: United States Central Intelligence Agency. Map File #505103 (547149) 2-82.
0 100 200 300 400
Miles

INSET


Number of Farms, 2005
Thousands
0 - 25
26 - 65
72 - 230
0
500
Miles
0
1,000
Miles
0
500
Miles
Source: U.S. Department of Agriculture,
National Agricultural Statistics Service.

INSET

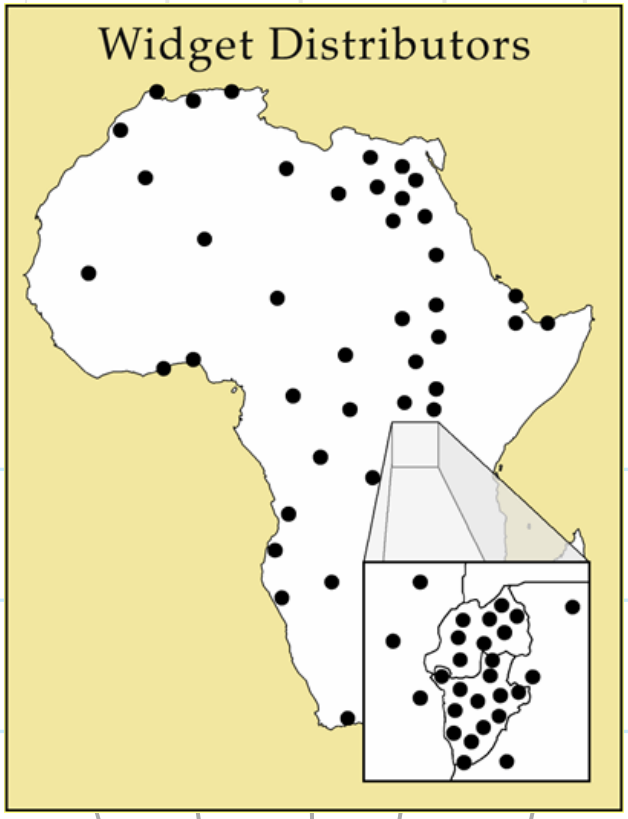
- Can be used to show the primary mapped area in relation to a larger, more recognizable area (a locator r



Shows Relative Location

INSET

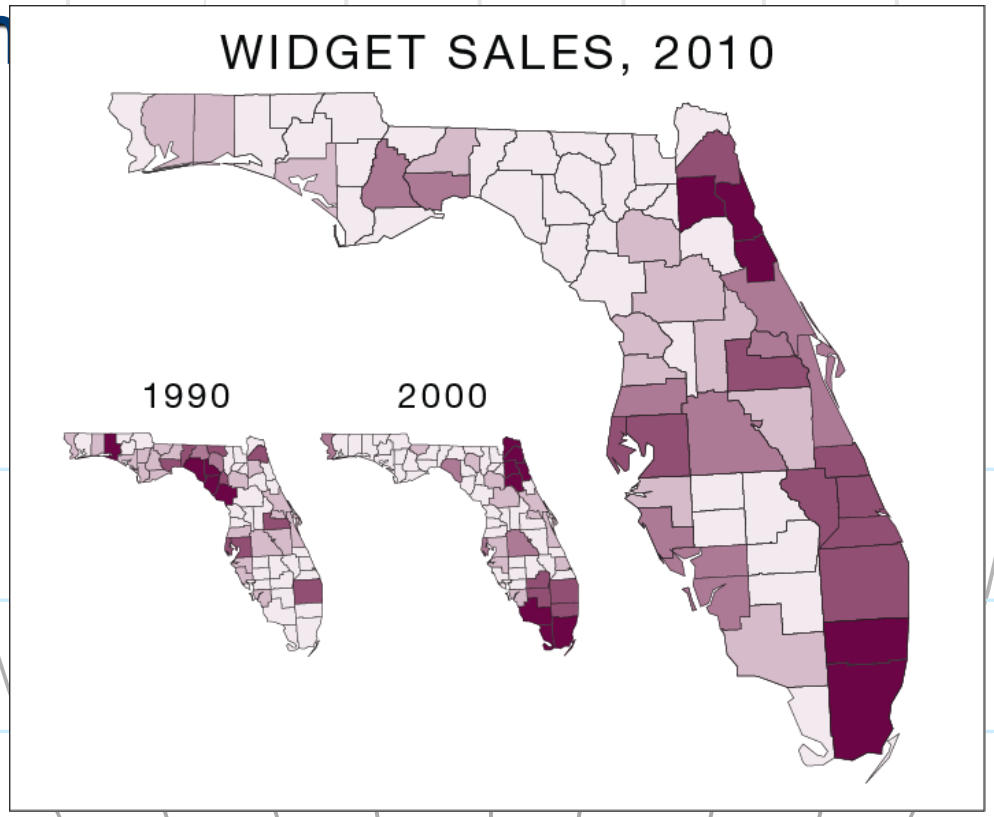
- Can be used to enlarge important or congested areas (a zoom, or blow-up map)



Shows Enlargement of an Area

INSET

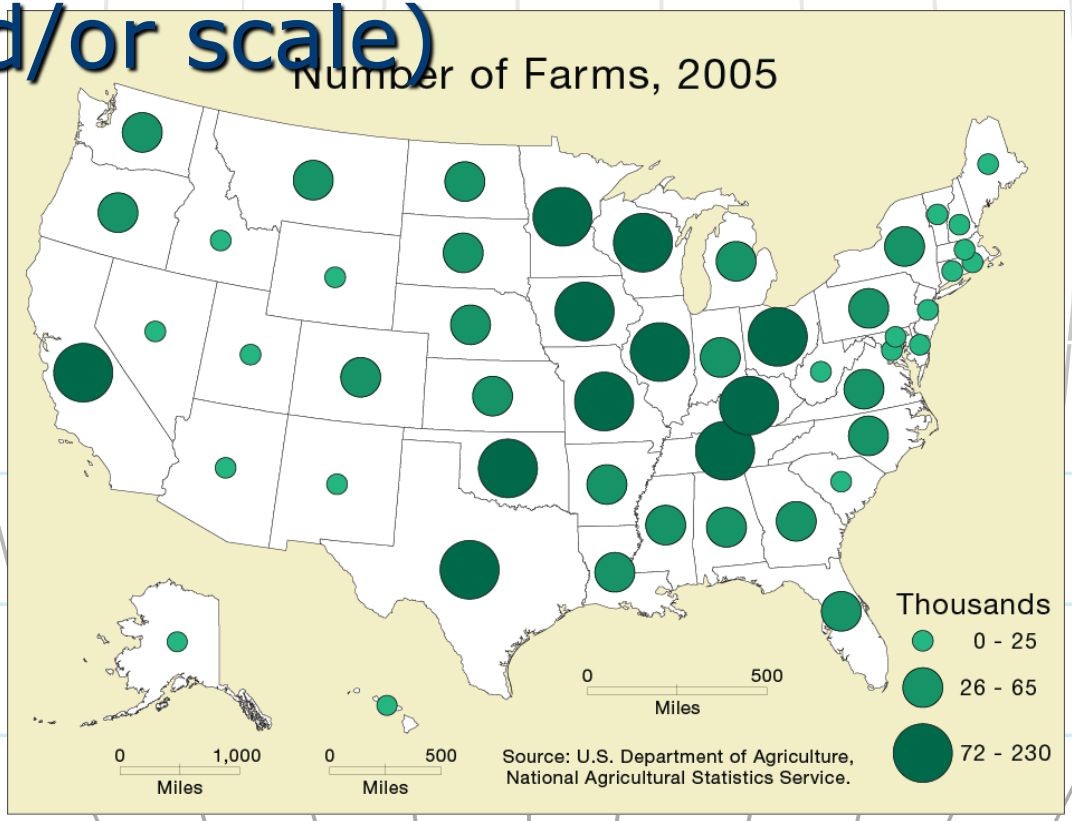
- Can be used to show topics that are related to the map's theme, or different dates of a common ther



Shows Related Themes or Dates

INSET

- Can be used to show areas that are related to the primary mapped area (different location and/or scale)



Shows Related Areas

4- Title and subtitle

- Describe map theme as short as possible
- Will draw attention
- No abbreviations
- Word "map" should be avoided
- Title is visually bigger than subtitle
- Avoid **bold**, *italics*. Keep it simple
- Located most often above the map or above the legend

Homeownership, 2000
White Non-Hispanic Householders

Change in Minority Homeownership, 1990 to 2000

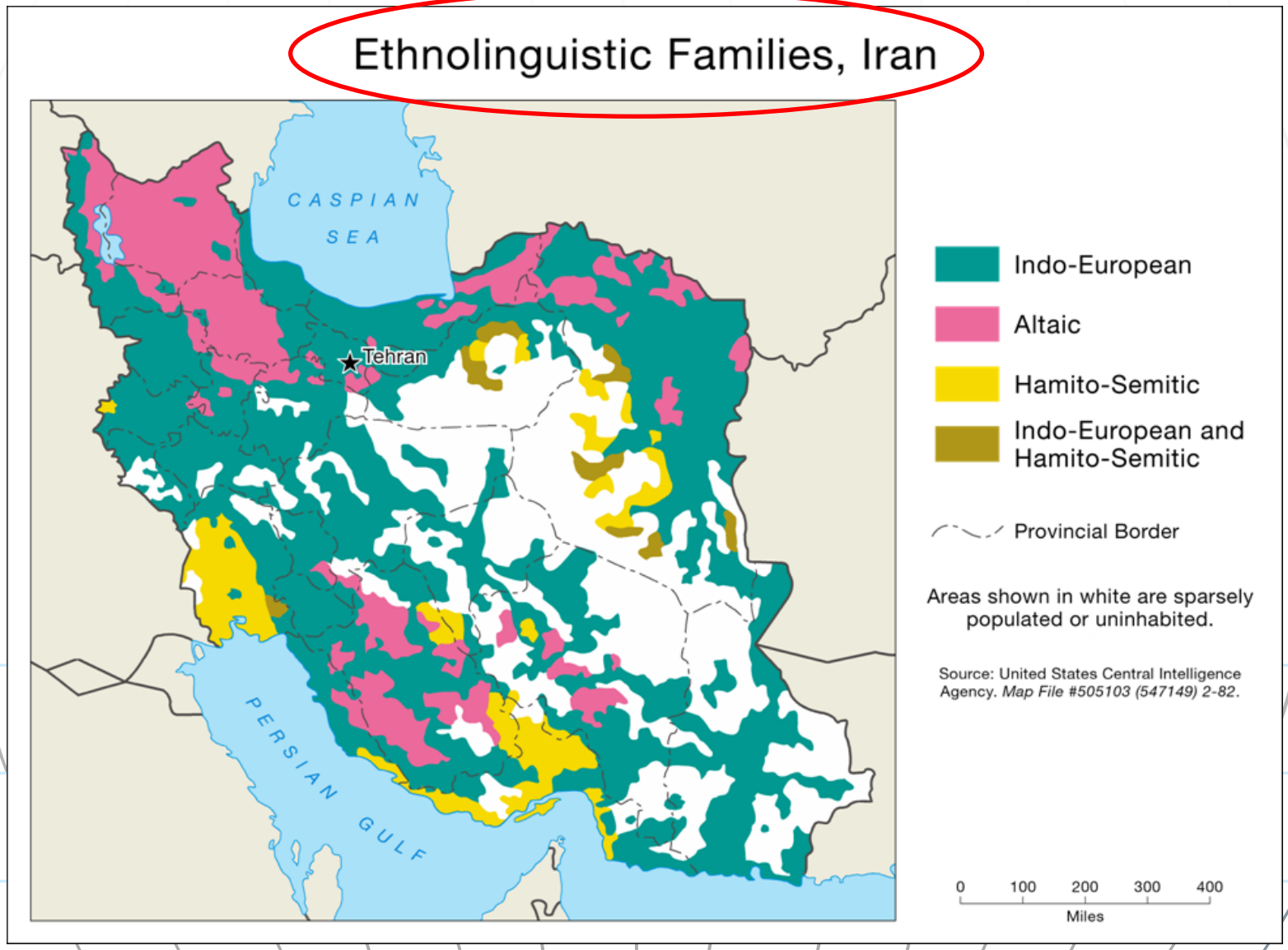
Number of Mobile Homes, 2000

Source: US Census atlas, 2000

TITLE and SUBTITLE

- The title and subtitle tell the map user what the map is about
- Most thematic maps require a title
  - A title is sometimes omitted when a map is used as a figure in a written document, assuming that the title is clearly expressed in the figure caption
  - A well-crafted title can draw attention to a map

TITLE and SUBTITLE



TITLE and SUBTITLE

- The Title of a thematic map is a succinct description of the map's theme
  - General reference maps typically employ the geographic region as the title
- Unnecessary words should be omitted
  - But care should be exercised to avoid cryptic abbreviations
- Don't include the word "Map" in a title!

TITLE and SUBTITLE

Long Term Debt

AVERAGE AGE, 2001

Museums of Modern Art

Appropriate Titles

Manhattan Kansas Waterlines and Utility Covers

Map of Cougar Siting Locations in Sierra County, California, During the Years 2008 and 2009

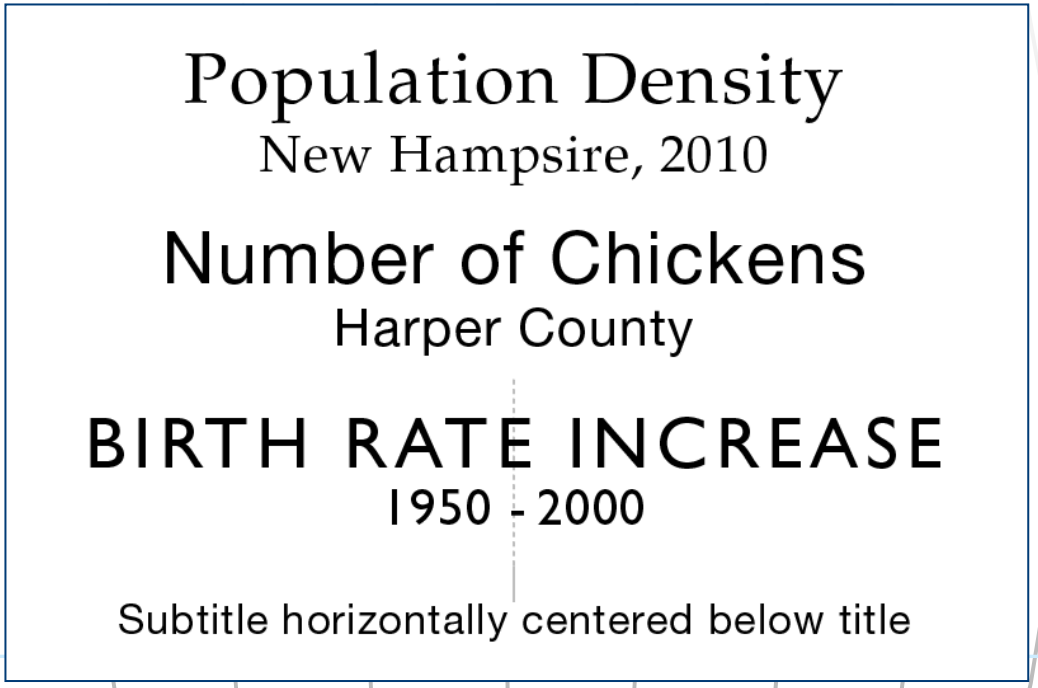
MARHH_CHD CONCHO FIPS 095

Inappropriate Titles

TITLE and SUBTITLE

- The subtitle, if employed, is used to further explain the title
  - The geographic region and date are common components of the subtitle
  - The geographic region is often omitted (when it is easily identifiable)
- The subtitle should be horizontally centered below the title (center justified)

TITLE and SUBTITLE



Titles with Subtitles

TITLE and SUBTITLE

- The style of the Title and Subtitle should be plain
  - Avoid *italics* and ornate type styles
  - Think twice about using **bold** (not required if appropriate type sizes are chosen)
  - Use a subtle bounding box around the title and subtitle *only* if it is necessary to mask the underlying mapped area to improve legibility

TITLE and SUBTITLE

Long Term Debt

Museums of Modern Art

AVERAGE AGE, 2001

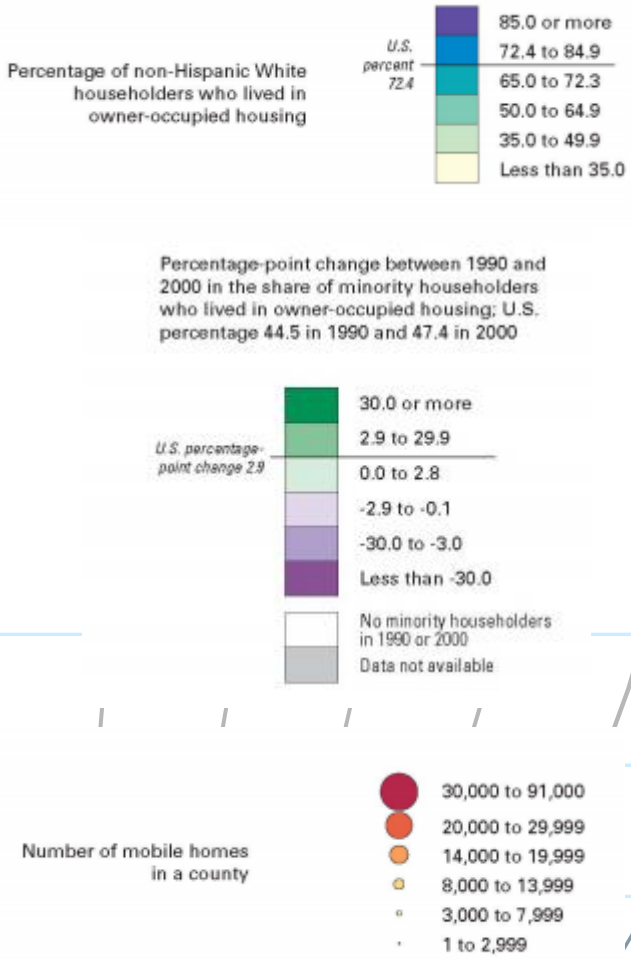
Inappropriate Styles

TITLE and SUBTITLE

- The title should generally be the largest type on a thematic map
  - The subtitle should be visibly smaller
- Both the title and subtitle should be limited to one line each in most cases
- If possible, place the title at top-center, where the map user is accustomed to seeing titles

5- Legend

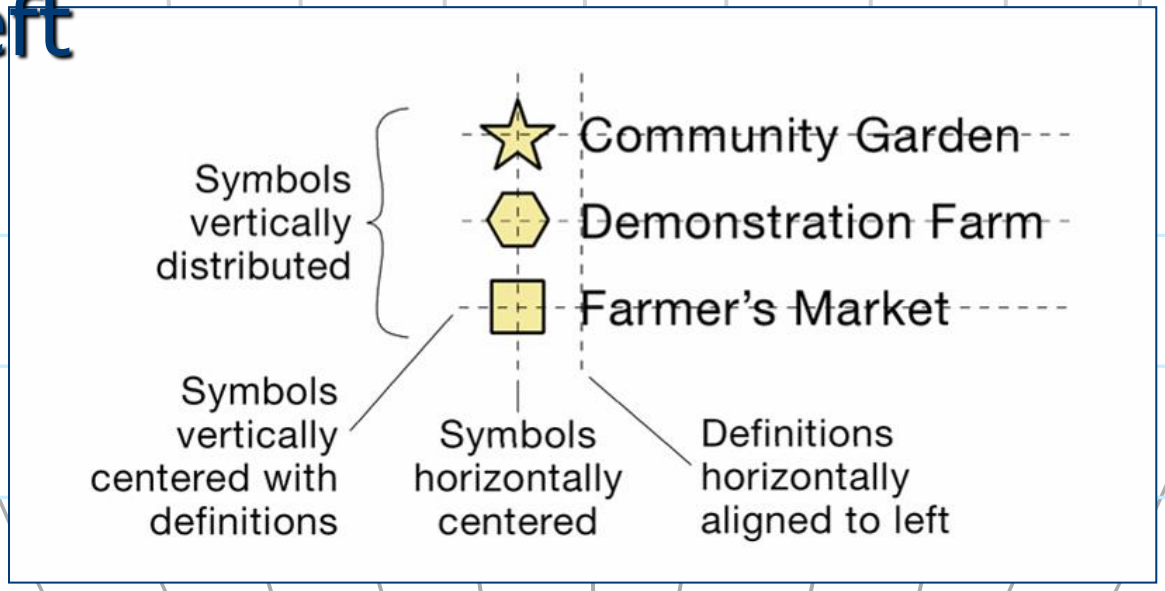
- Defines all thematic symbols
- Self-explanatory symbols are excluded (for example country borders)
- Avoid using box around the legend
- Forms a part of the map and normally is not separated
- Symbols should be identical (size, color, orientation to the map)
- Has sometimes also a title to explain indicators used
- Symbols and explanations should be aligned



Source: US Census atlas, 2000

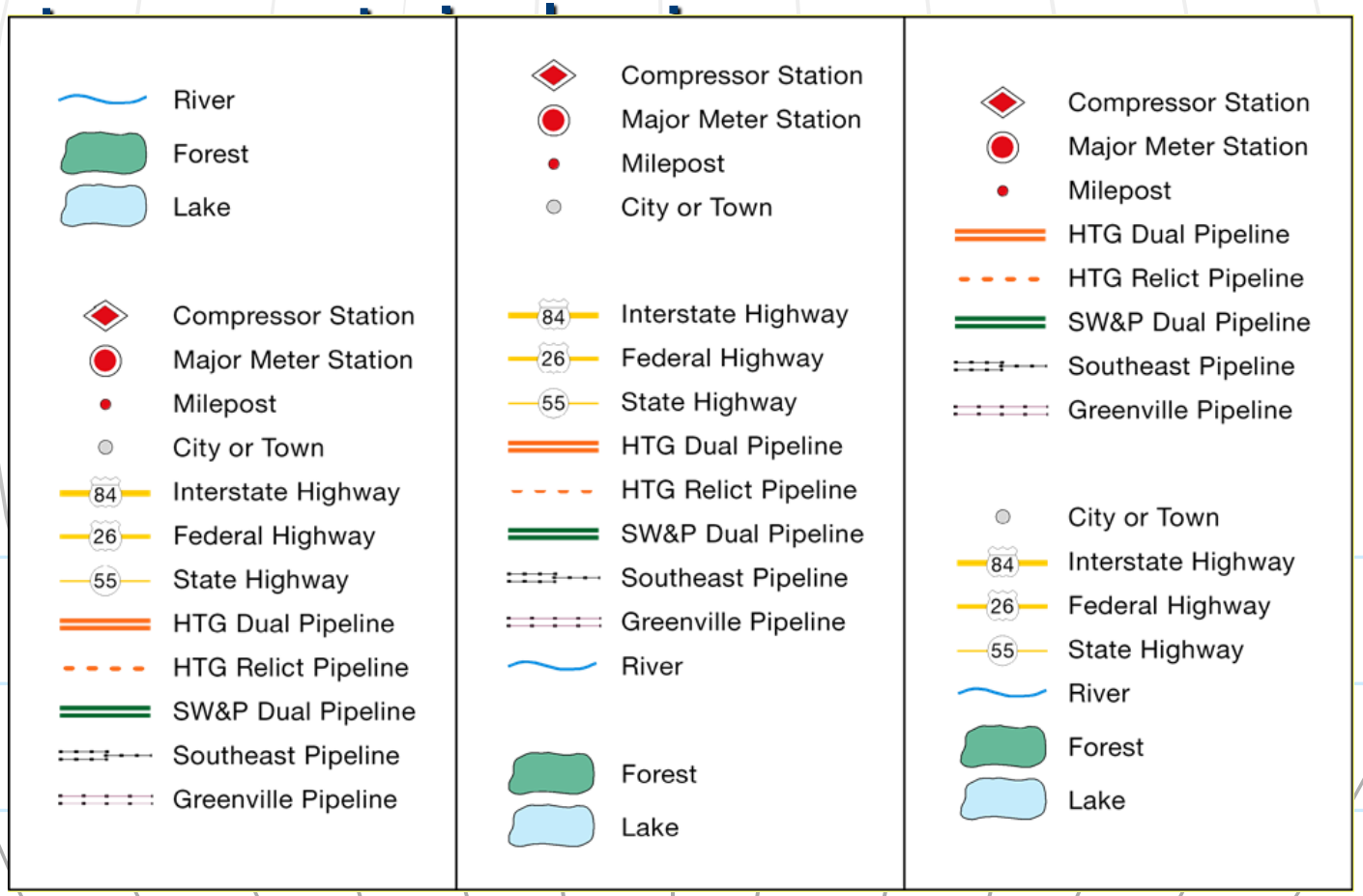
LEGEND

- Symbols should be vertically centered with their definitions
- Textual definitions and definitions consisting of individual numbers should be horizontally aligned to left



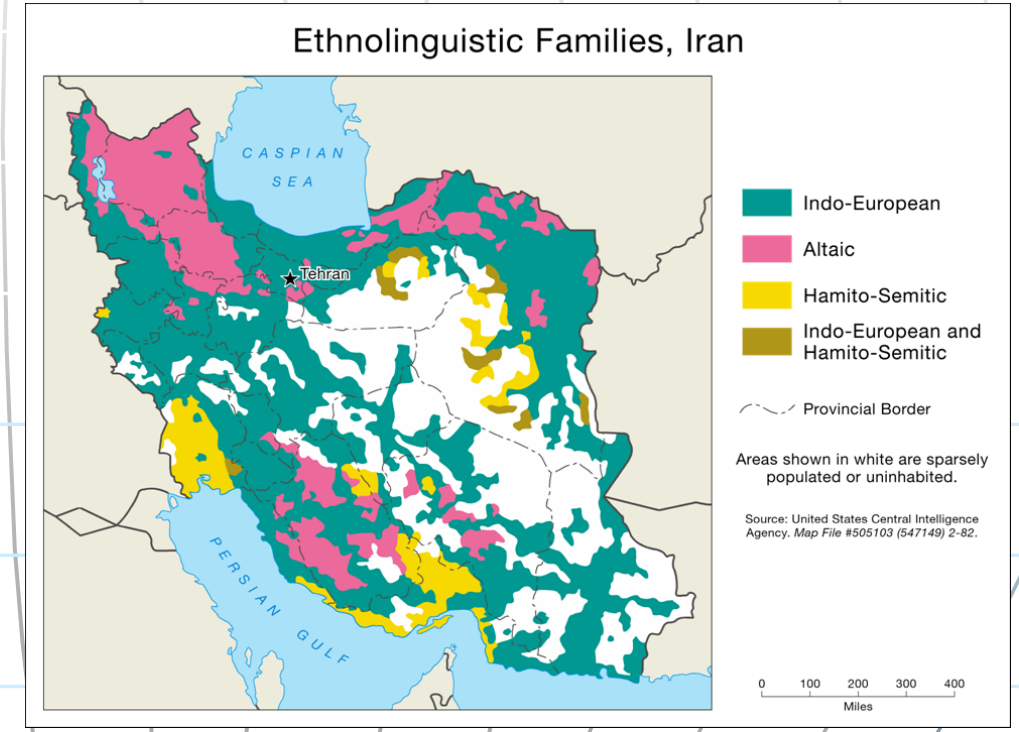
LEGEND

- Legend symbols are often organized into groups, according



LEGEND

- If possible, the legend should be visually centered within a larger portion of available space



Map Legends

- The legend is the key to unlocking the secrets of a map. Objects or colors in the legend represent something on the map.

6- Data source

- Allows to determine the orgin of data
- Data source is the smallest type of texts used in maps
- Commonly located on the right or left of the map bottom within the frame line
- Coordinate system and projection can be mentioned in case helping reading the map

Data sources:

National grid data
Data sources: National address, buildings and persons registers, aggregated to 1km² grid cells: Austria, Denmark, Finland, The Netherlands, Norway, Slovenia, Sweden.
National estimated datasets assigned to 1km² grid cells using data from administrative sources and building locations to geocode population: Estonia, France, Poland, Portugal, United Kingdom (England and Wales).

Disaggregated data for Belgium, Bulgaria, Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Romania, Slovakia, United Kingdom (Scotland and Northern Ireland), Iceland, Liechtenstein, Switzerland: Austrian Institute for Technology (AIT).
Source data: population per LAU2 (LAU1) 2006 (© Eurostat); EEA Fast Track Service Precursor on Land Monitoring - degree of soil sealing 2006 (© European Environment Agency); LAU2 administrative boundaries (© Eurogeographics); Corine land cover 2006 (© European Environment Agency); Open Street Map data (Geodaten © OpenStreetMap).

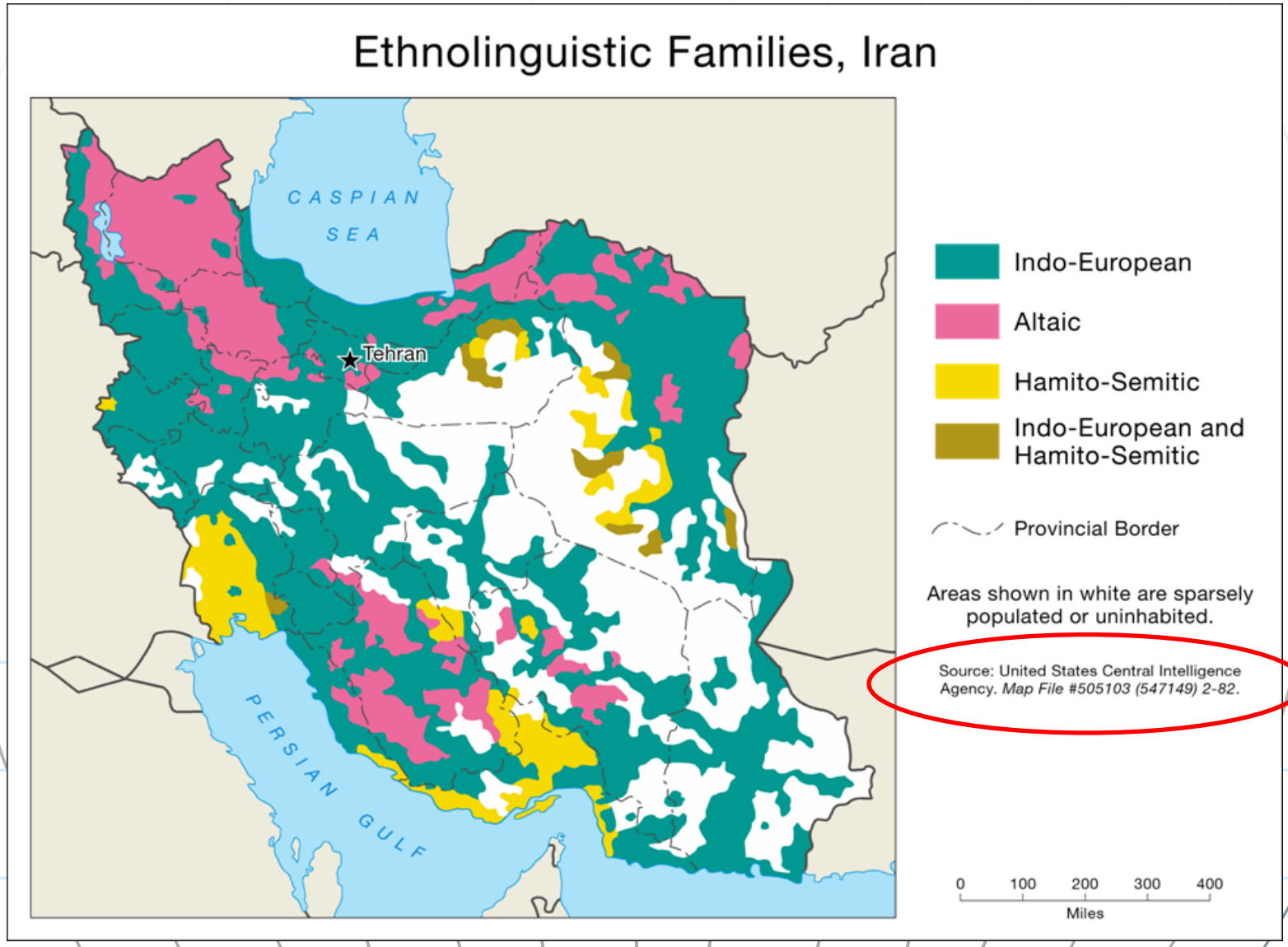
Disaggregated data for Spain: University of Valencia/IVIE & Polytechnic University of Valencia.
Source data: population per enumeration area 2006, enumeration area boundaries (© INE); SIOSE land cover/land use (© IGN).

Source: EFGS

DATA SOURCE

- Allows the map user to determine where thematic data were obtained
  - Sources of base information are normally omitted from thematic maps
- Should be formatted similar to a standard bibliographic reference
  - But is often more concise and less formal

DATA SOURCE


Ethnolinguistic Families, Iran
CASPIAN SEA
Tehran
PERSIAN GULF
Indo-European
Altaic
Hamito-Semitic
Indo-European and Hamito-Semitic
Provincial Border
Areas shown in white are sparsely populated or uninhabited.
Source: United States Central Intelligence Agency. Map File #505103 (547149) 2-82.
0 100 200 300 400
Miles

DATA SOURCE

- The words "Data Source:" or "Source:" should be included to avoid ambiguity
  - The data source indicates where data came from, not map authorship
  - A separate block of type can be used

Source: Census 2010, *Summary File 3*, U.S. Census Bureau.

Data Source: *ESRI Data & Maps*, 2007.

Source: United States Central Intelligence Agency.
Map File #505103 (547149) 2-82.

Data Source: National Atlas of the United States,
http://www-atlas.usgs.gov/mld/huralll.html

DATA SOURCE

- The style of the data source should be plain and subtle
- Publication names should be italicized
- Multiple lines of type should be h… j…

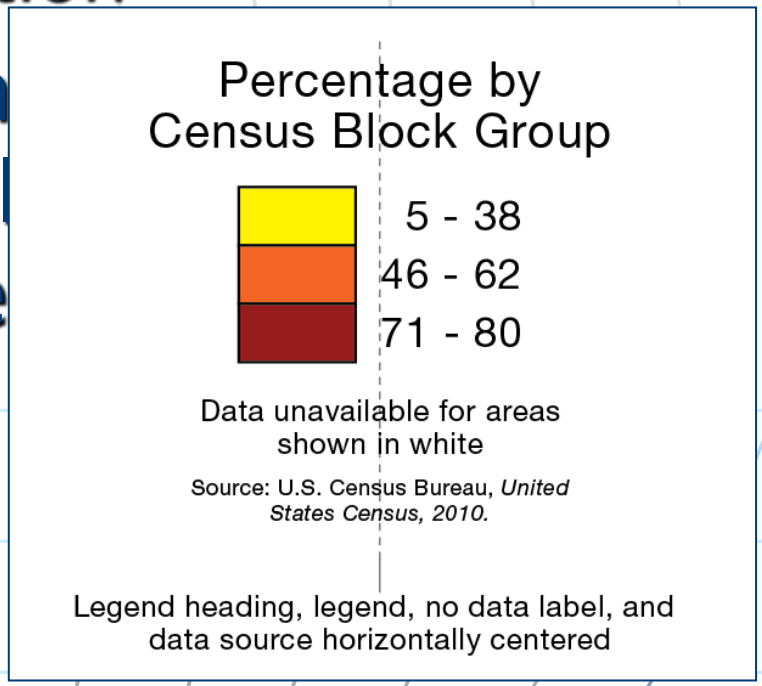
Source: The International Bank for Reconstruction and Development/The World Bank.
World Development Report, 2000: Poverty.

Source: Field Survey by Nigel Tufnel and David St. Hubbins, December, 2008.

Multiple lines are horizontally centered

DATA SOURCE

- The data source should be among the smallest type on a map
  - Its purpose is to inform the curious, not to attract attention
- Optimally, the data source is horizontal centered below the legend

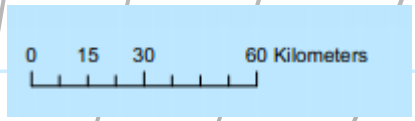


7- Scale

- Helps to understand how much reduction has taken place
- Helps to measure the distances
- Ways of representing scale:
  - Representative fraction is ratio of map distance to Earth distance . Becomes invalid then the map is enlarged or reduced.
  - Verbal scale explains the relation between the map and earth distances. Becomes invalid then the map is enlarged or reduced.
  - Scale bar represents the map distance to Earth distance by using graphic.

1:100 000

1 cm to 100 km



Scale

- Maps are made to scale; that is, there is a direct connection between a unit of measurement on the map and the actual distance.
- For example, each inch on the map represents one mile on Earth. So, a map of a town would show a mile-long strip of fast food joints and auto dealers in one inch.

Scales

Representative Fraction
1:50,000

Verbal Statements
One cm to 0.5 km

Scale Bar

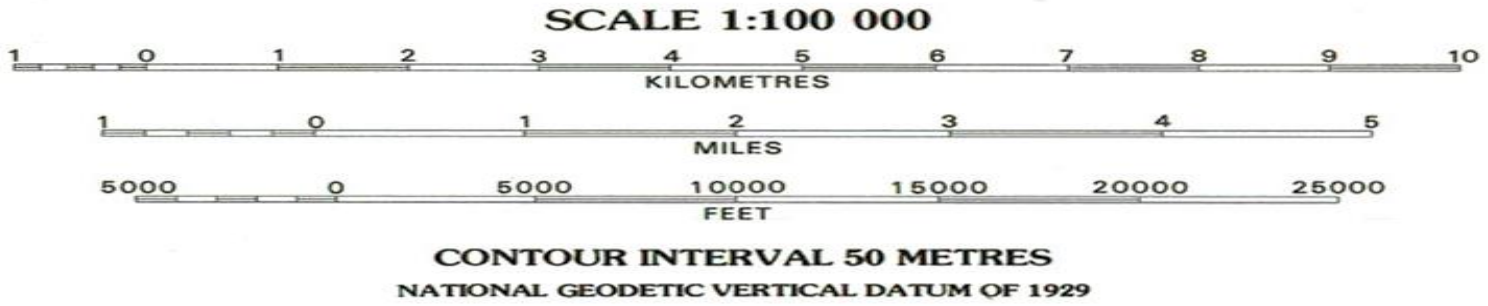


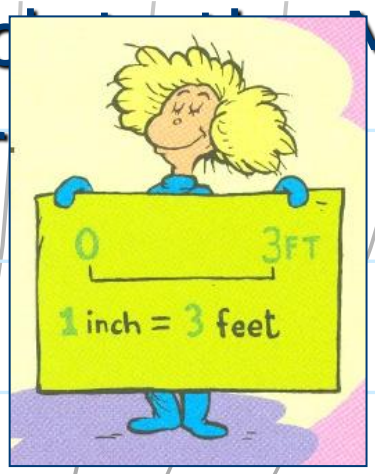
image from http://depts.washington.edu/natmap/education/protocols/maps/map_scale_bar.jpg

Scale

- Large Scale
  - 1:5,000 …..City map
- Small Scale
  - 1:30,000,000 …..Map of Canada

SCALE

- Indicates the amount of reduction that has taken place on a map, or allows the map user to measure distances
- Can take three forms
  - Representative Fraction (1:24,000)
  - Verbal Scale ("One Inc Mile")
  - Bar Scale or Scale Bar

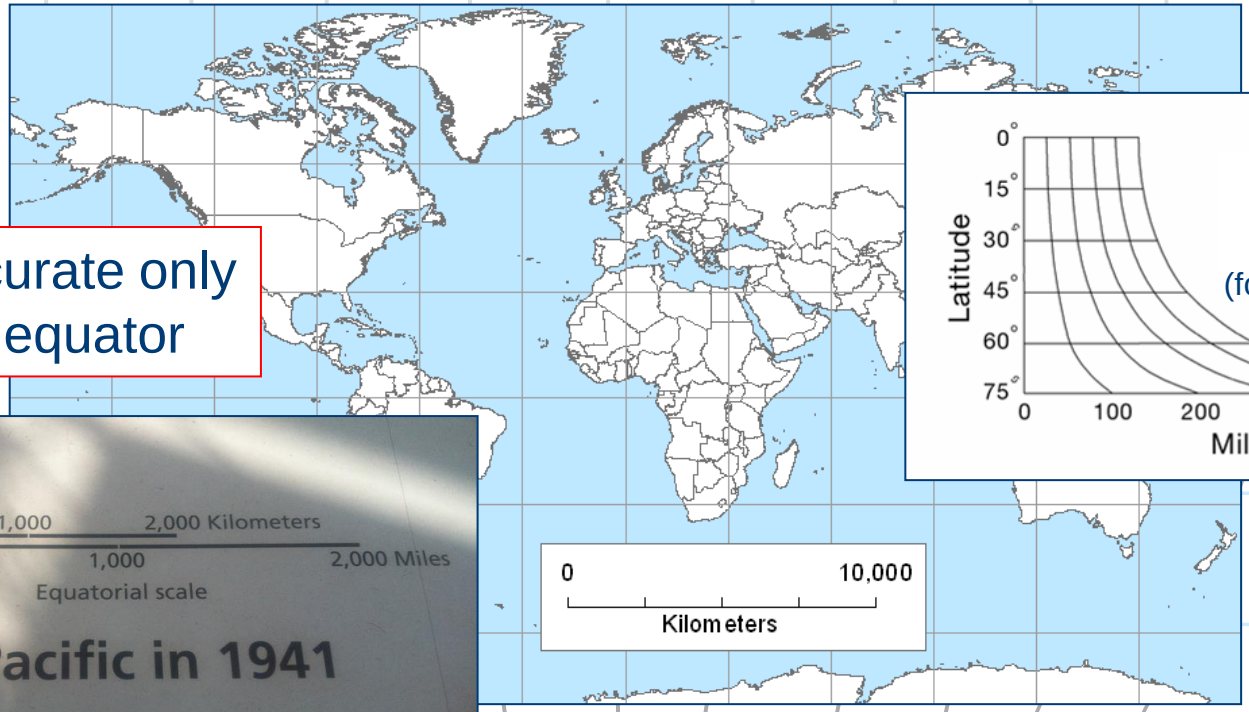


SCALE

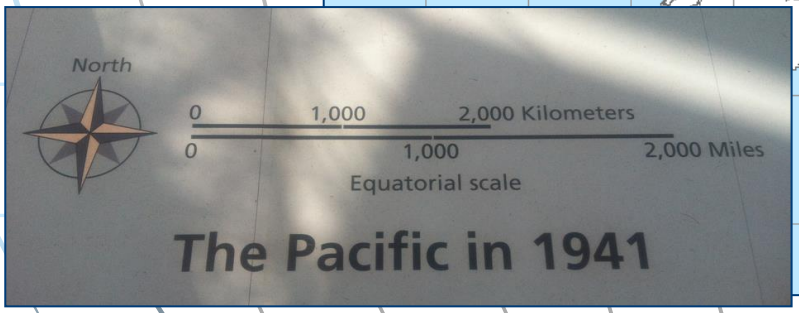
- The bar scale is the preferred format for inclusion on a thematic map
  - Resembles a ruler that can easily be used to measure distances on a map
  - Remains true when a map is enlarged or reduced (representative fractions and verbal scales don't)

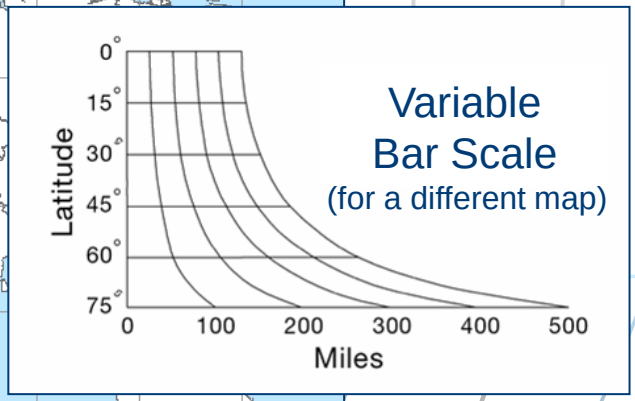
SCALE

- Use caution when employing bar scales on smaller scale maps
  - Scale is only accurate along standard lines



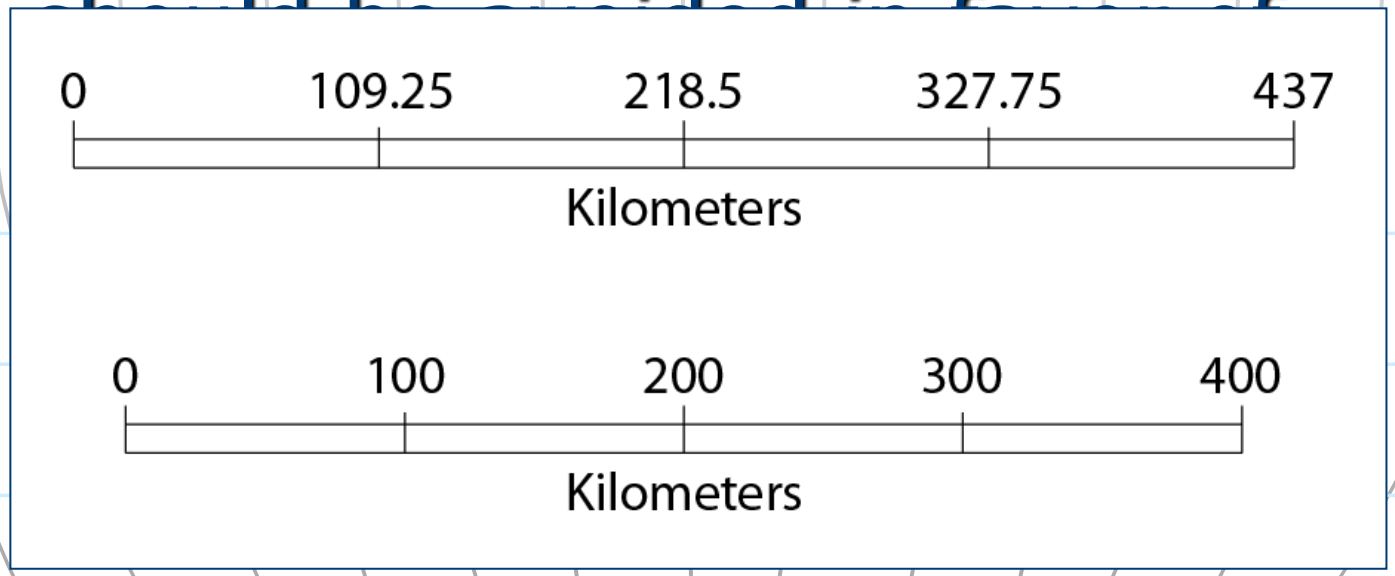
Scale is accurate only along the equator





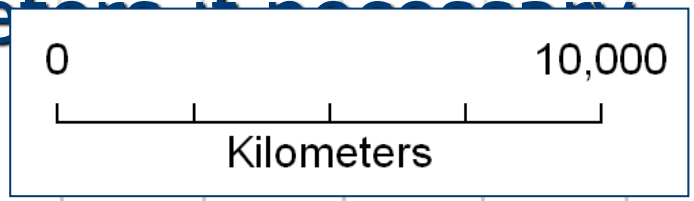
SCALE

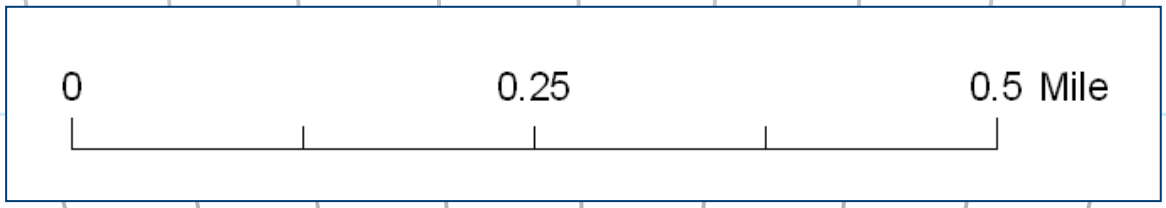
- The maximum distance value should always be round and easy to work with
- Decimal values such as 327.75 are difficult to work with and

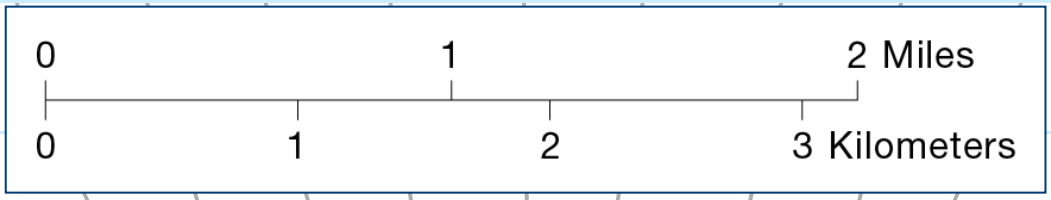


SCALE

- Incorporate a unit of measure that is appropriate for the intended audience
  - Incorporate both miles and kilome

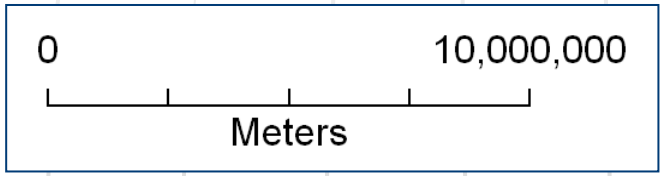




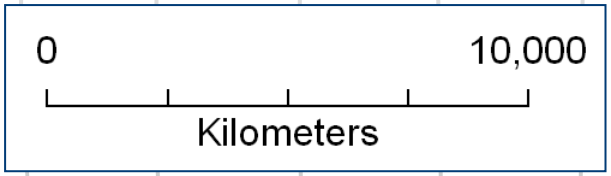


SCALE

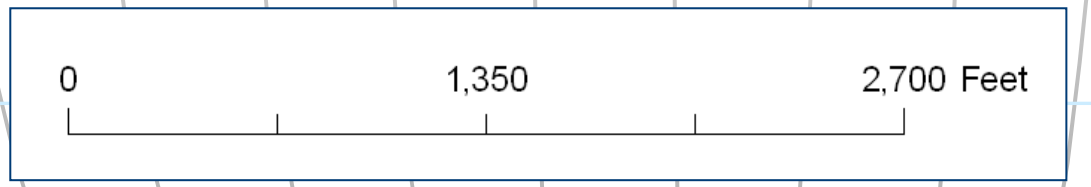
- Choose a unit of measure that is appropriate for the maximum value



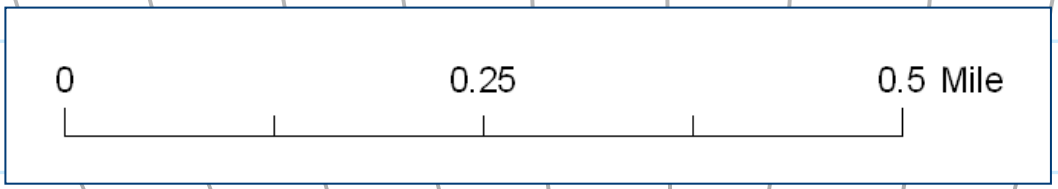
Inappropriate



Appropriate



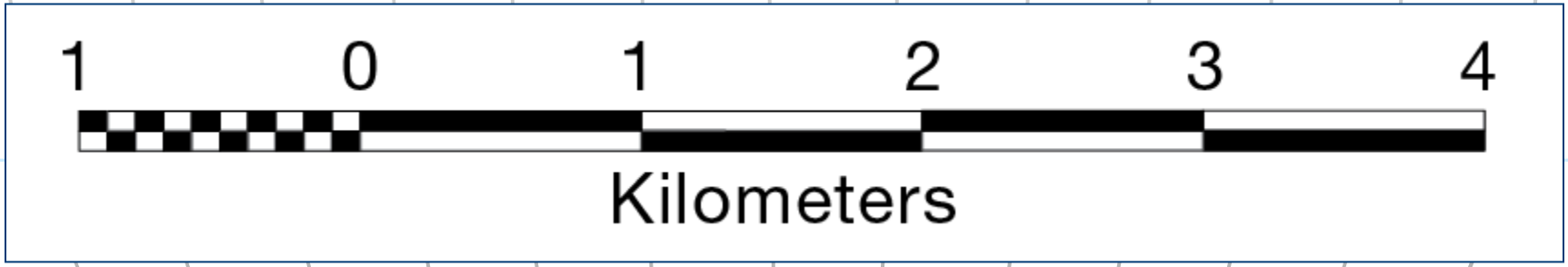
Inappropriate



Appropriate

SCALE

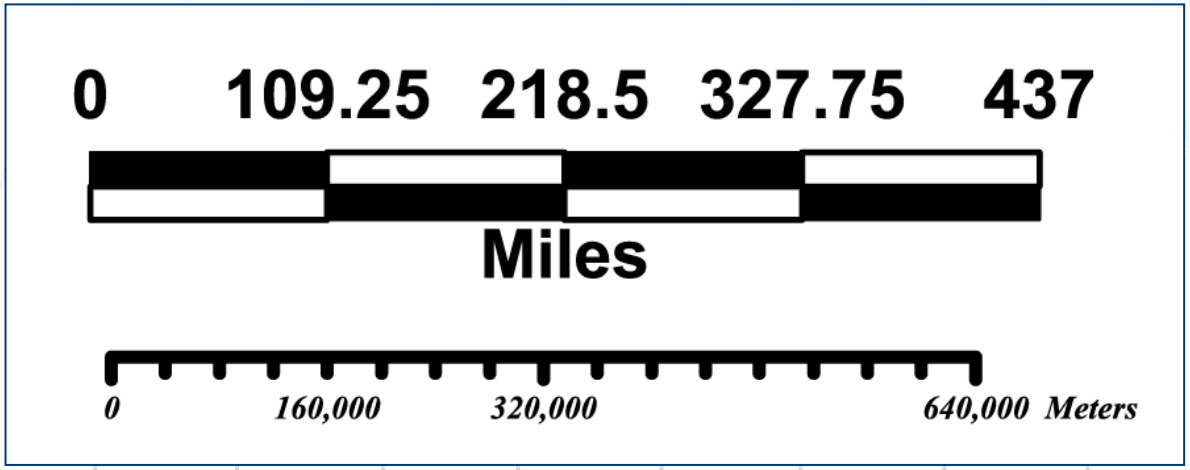
- Don’t use an “extension scale” unless the map user requires it
  - The extension scale can be useful when employing a specific method of map measurement, but is also a source of confusion for many map users



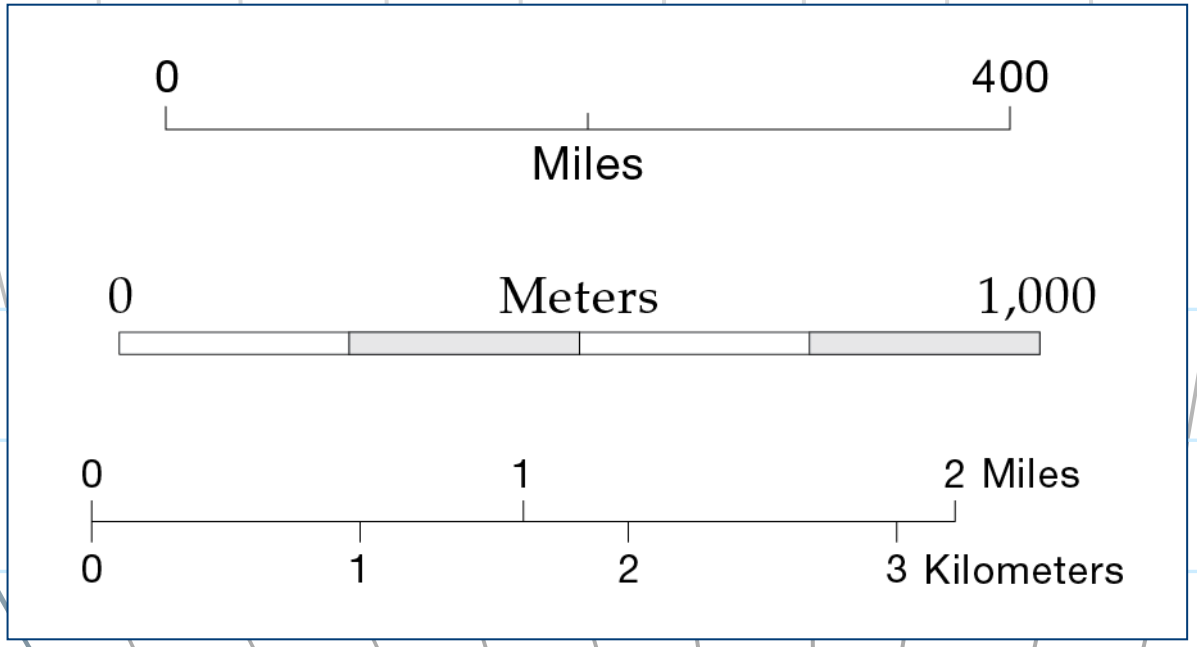
SCALE

- The style of the bar scale should be simple and subtle; it should not attract attention
  - Bulky and complex designs should be avoided
  - Line weights should be fine and type should be among the smallest on a map
  - Avoid the use of bold and italic type styles
  - Include a small number of intermediate tic marks

SCALE



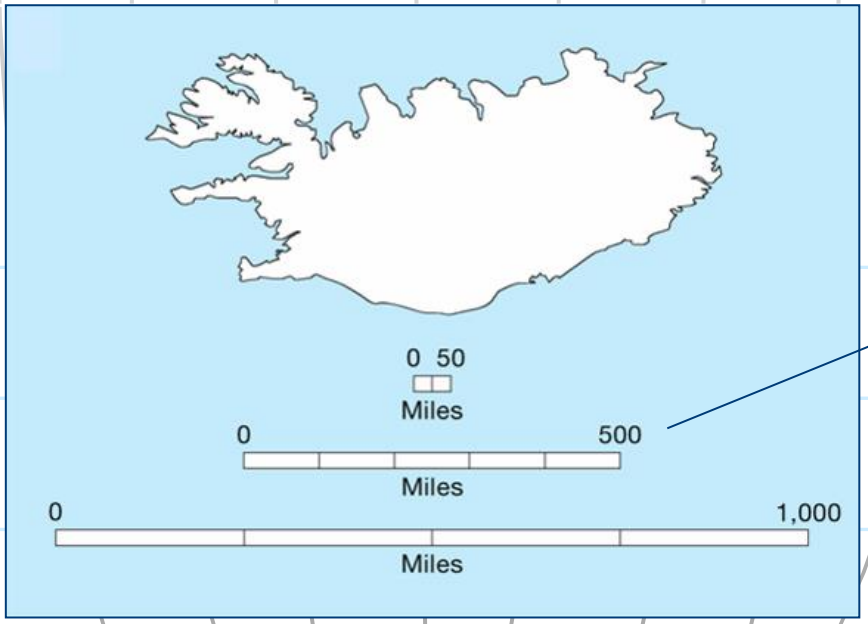
Poorly Designed



Well Designed

SCALE

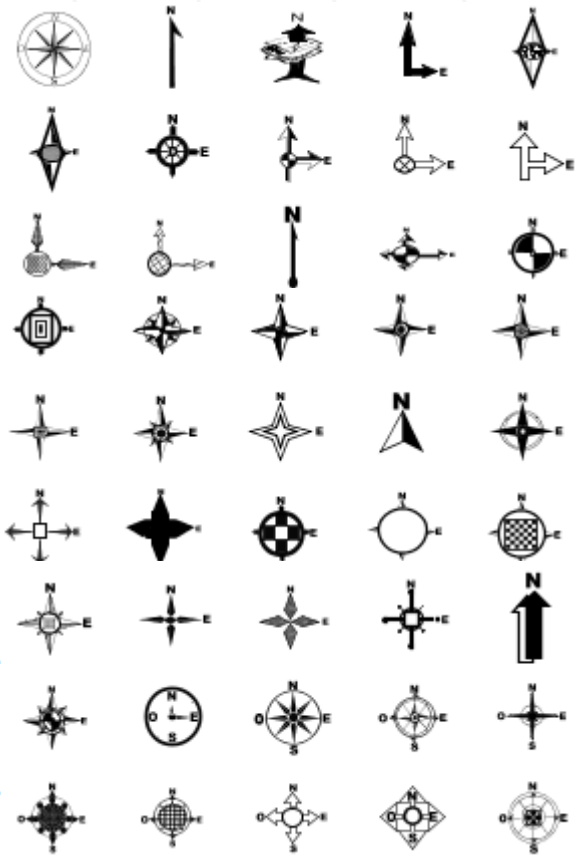
- The bar scale should be long enough to be useful but not so long as to be cumbersome
  - Experiment to arrive at an appropriate length and an appropriate maximum value



Most Appropriate

8- Orientation

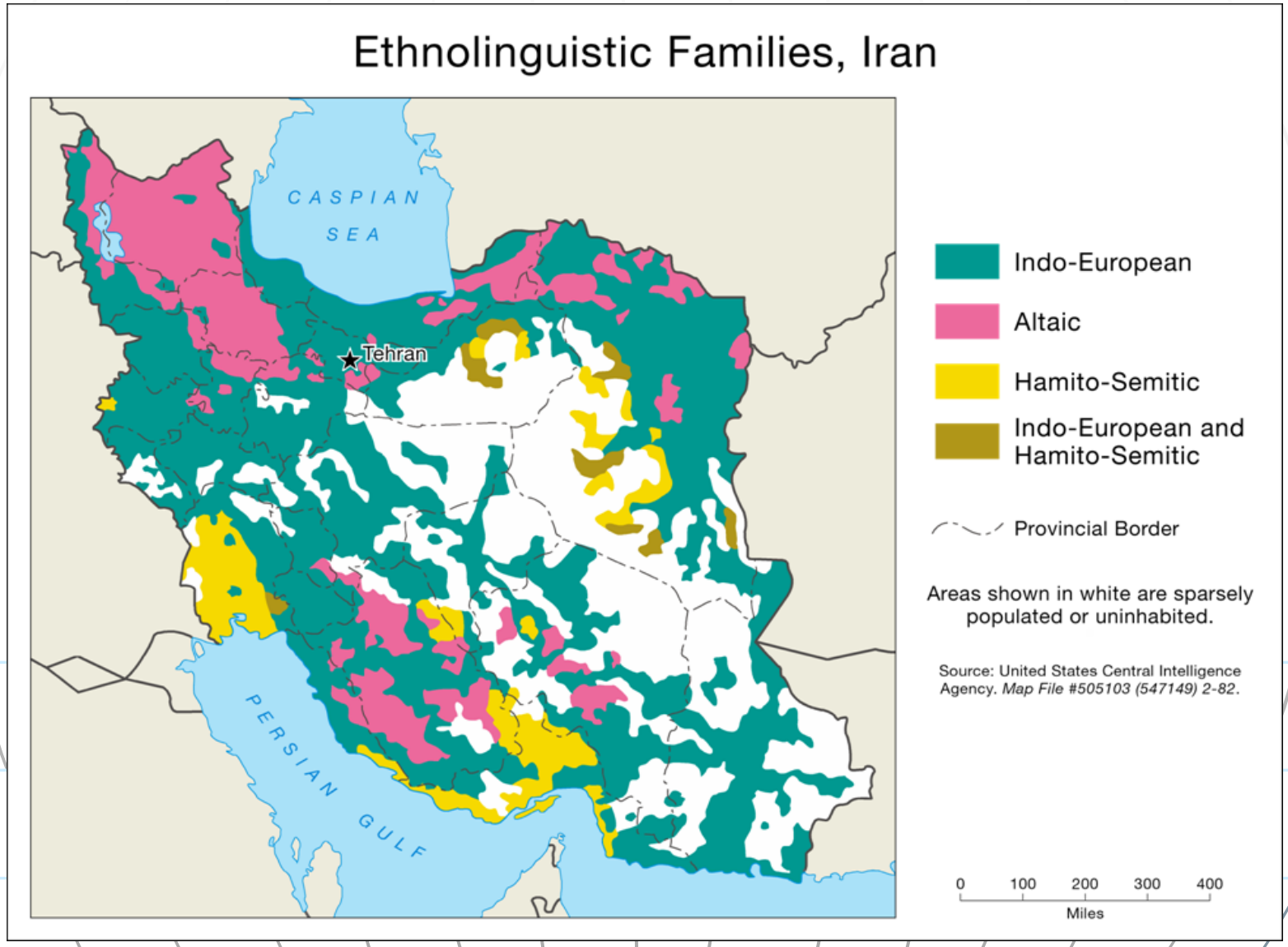
- Represents the north on the map
- Should be represented then north is not on the top
- Ways of representing scale:
  - North arrow - myriads of choices but keep it simple
  - Graticules – grid lines representing longitude and latitude. Meridians are indicating the north direction



ORIENTATION

- The indication of north on a map
- Orientation can be indicated by a
  - North Arrow
  - Graticule (a system of grid lines, normally representing longitude and latitude)

ORIENTATION

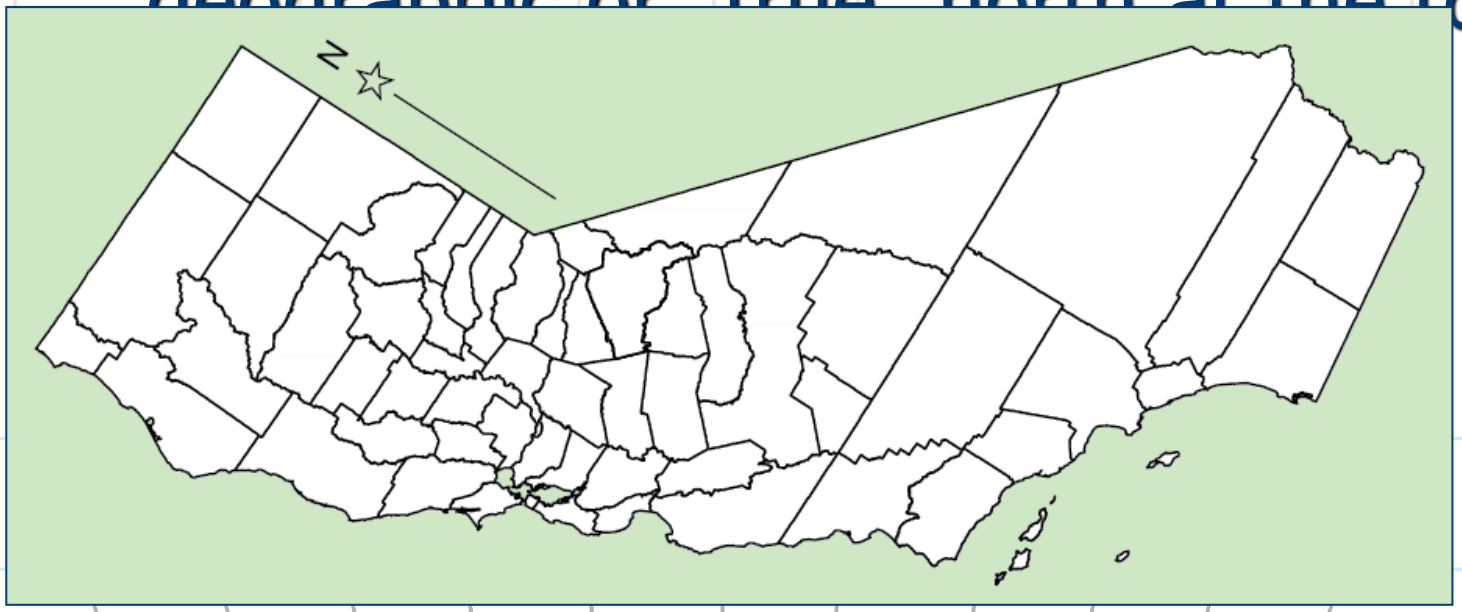


ORIENTATION

- A north arrow is *not required* on *every map!*
  - The orientation of maps with north at the top is a long-standing tradition
  - It is assumed that "north is at the top" of most modern maps

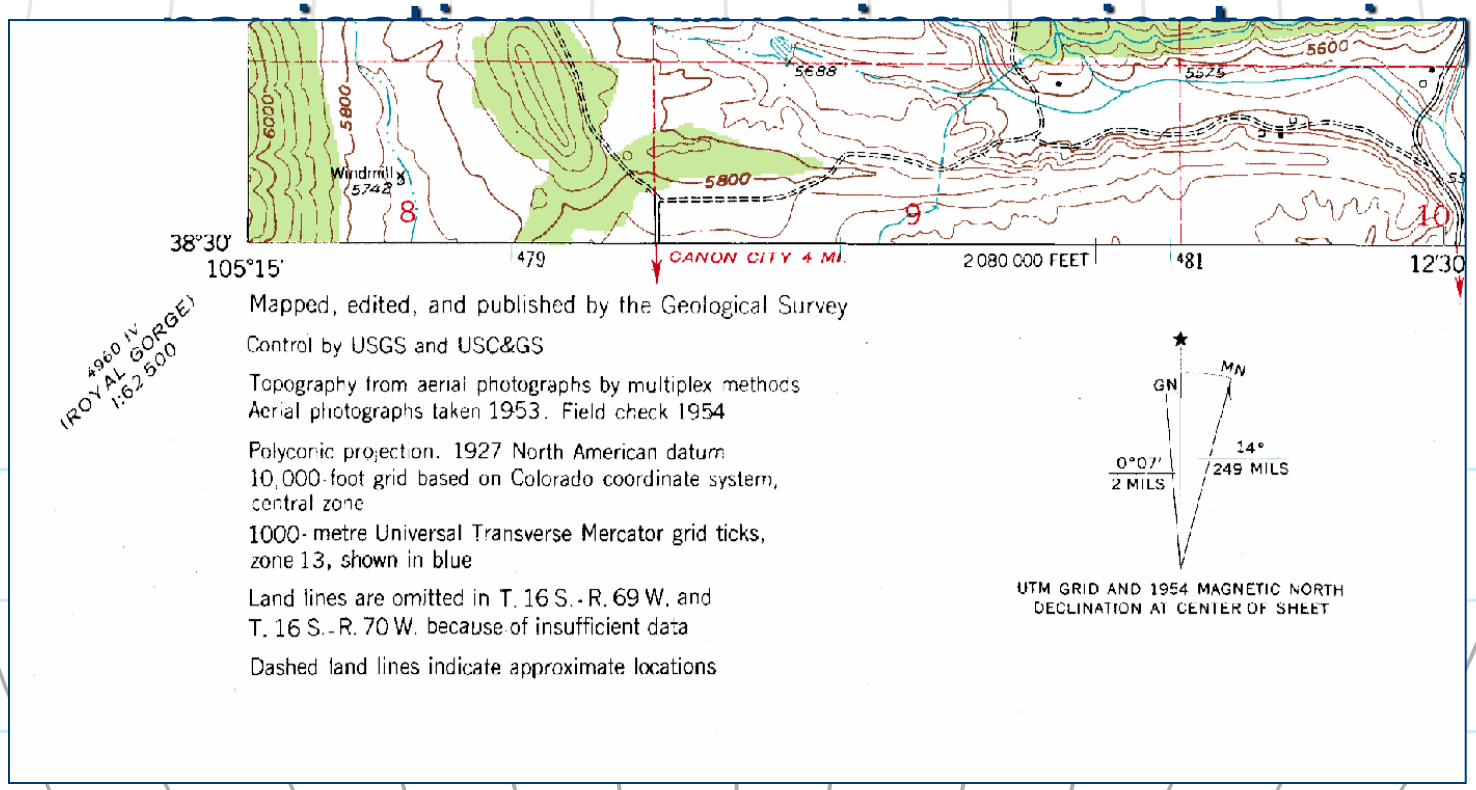
ORIENTATION

- Include an indication of orientation if
  - The map is *not* oriented with geographic or "true" north at the top



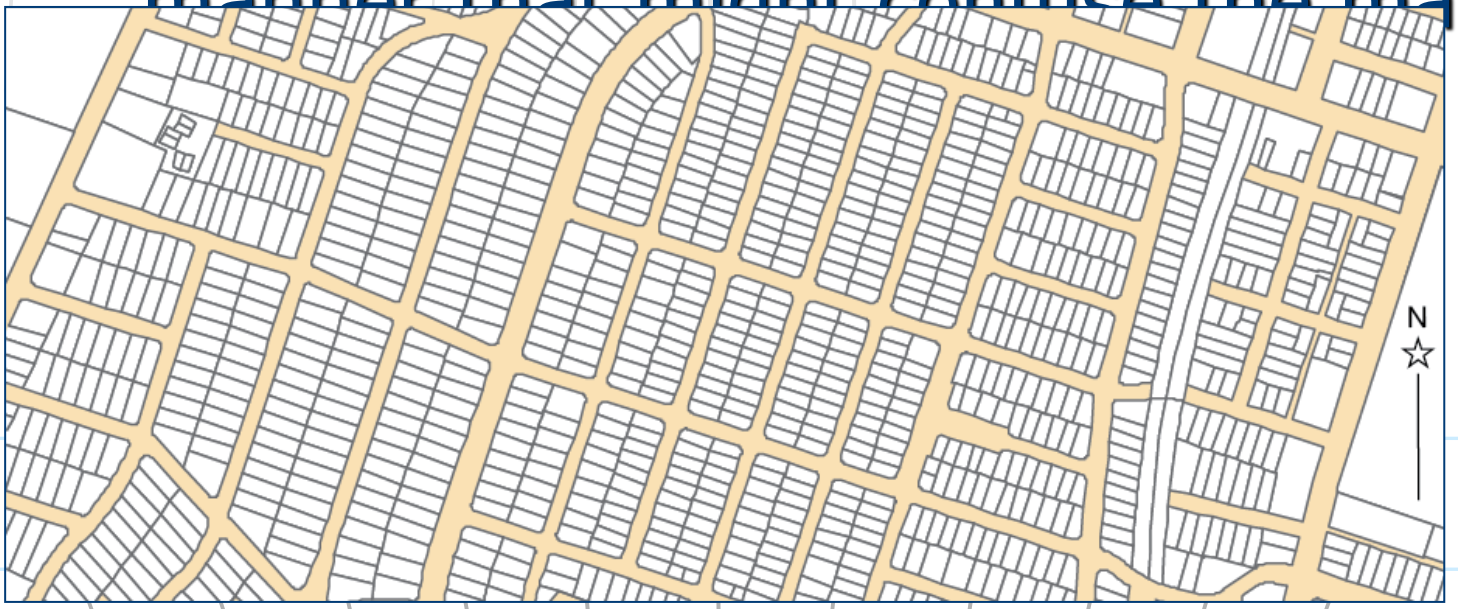
ORIENTATION

- Include an indication of orientation if
  - The map is intended for use in



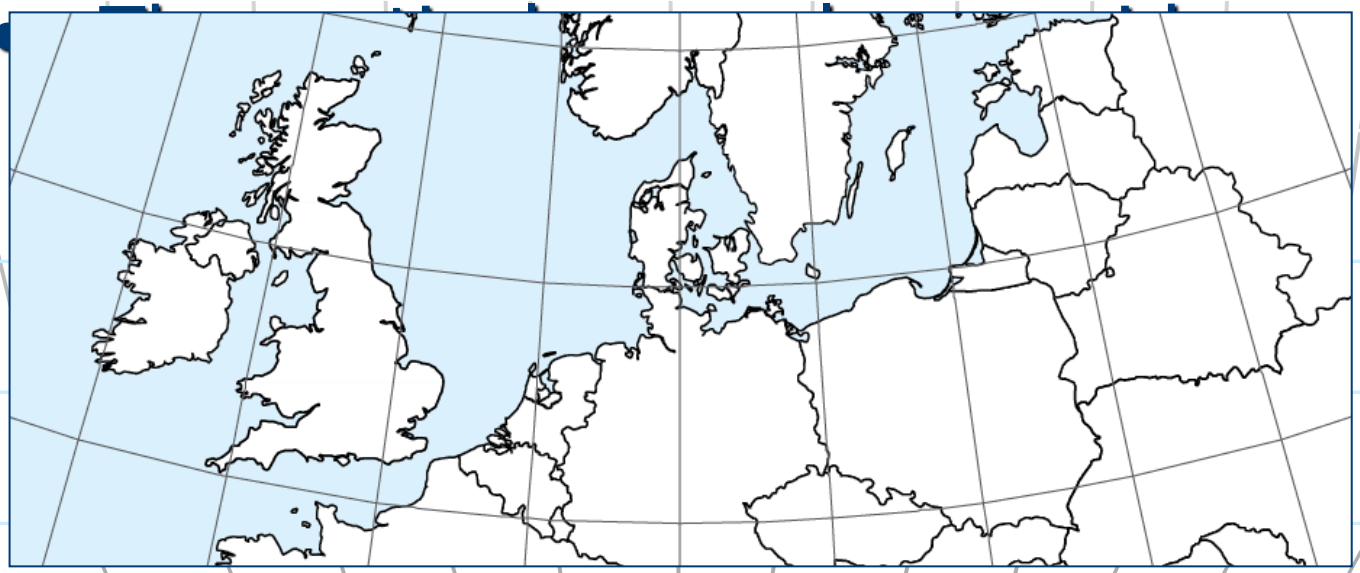
ORIENTATION

- Include an indication of orientation if
  - Geographic features are oriented in a manner that might confuse the map



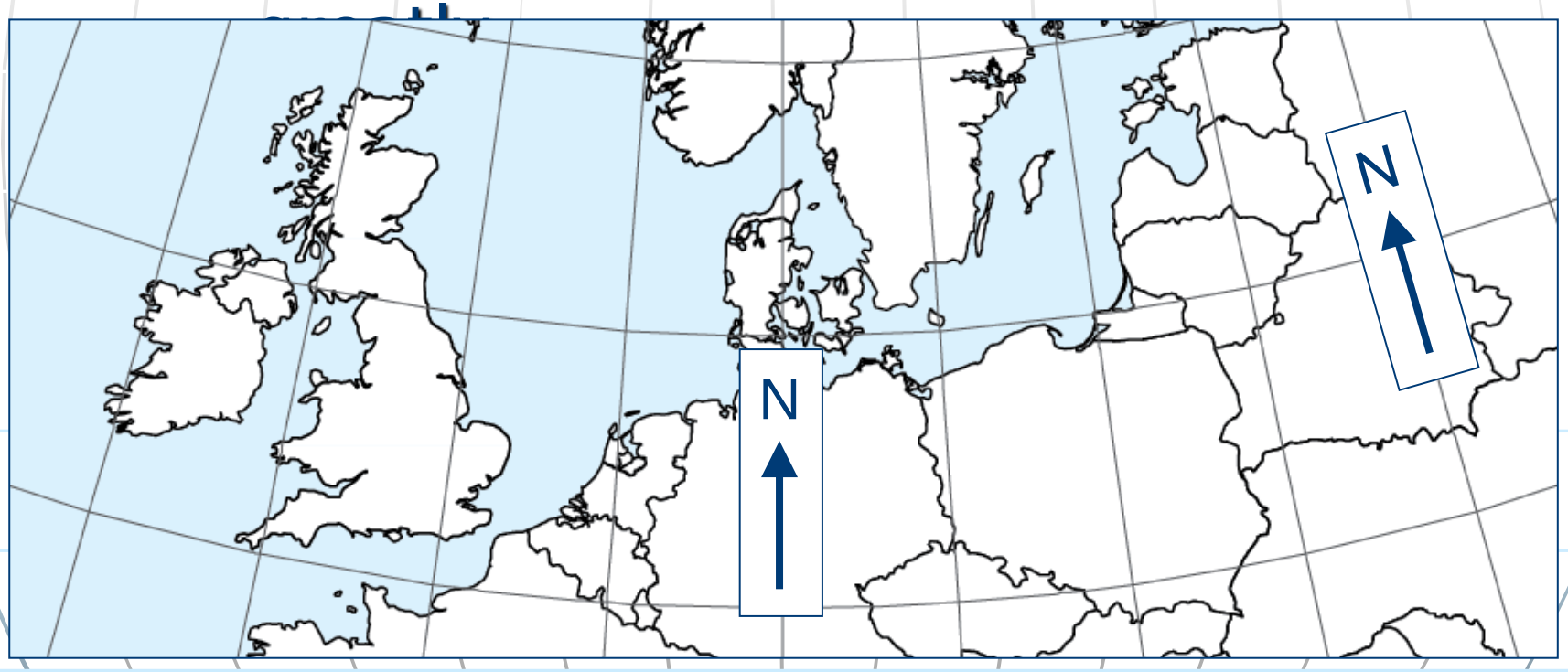
ORIENTATION

- A graticule indicates direction through the orientation of grid lines
  - Typically meridians that run north–south
  -



ORIENTATION

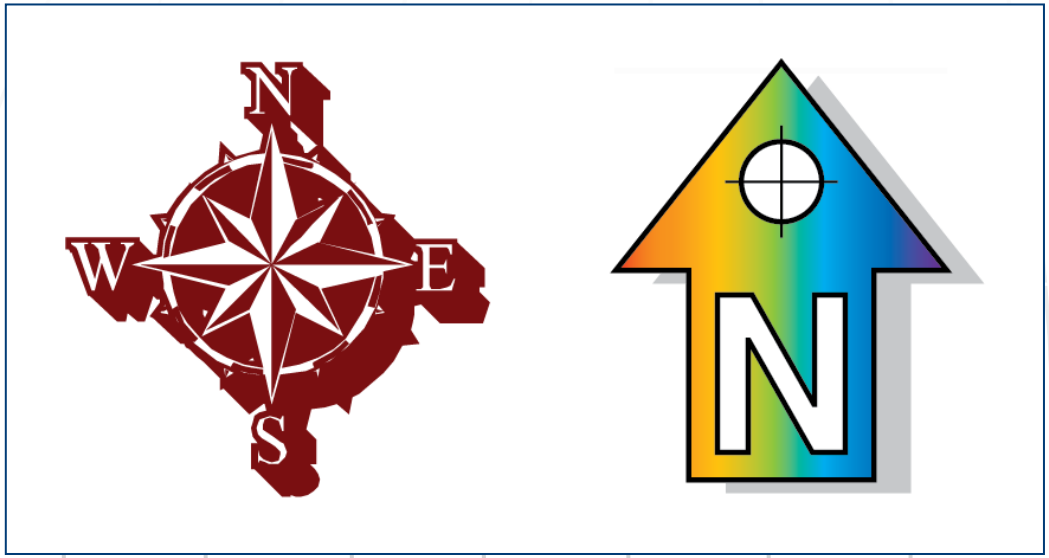
- Use caution when using north arrows on smaller scale maps
  - The direction of north can differ



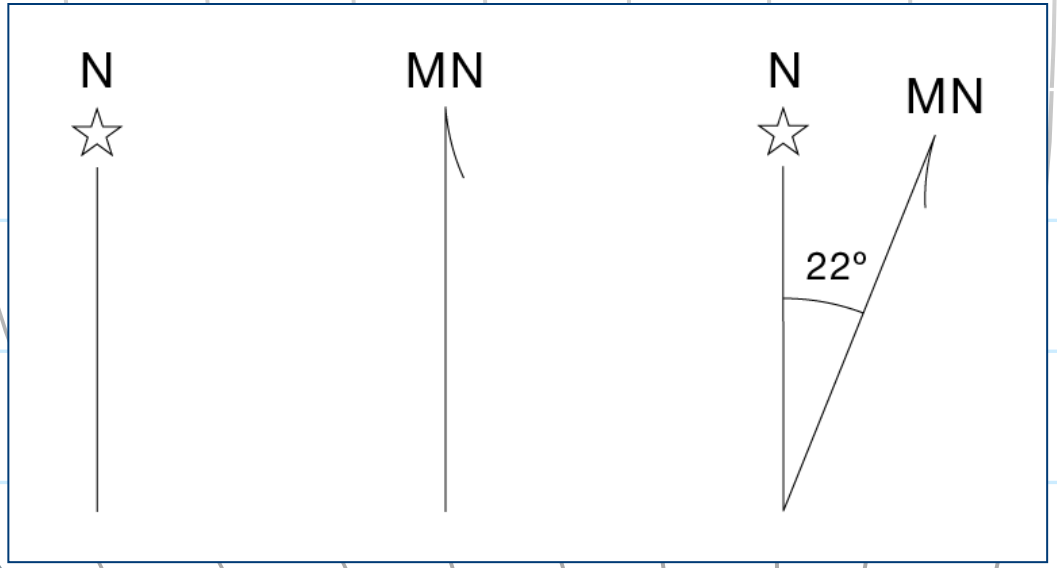
ORIENTATION

- The style of the north arrow and graticule should be simple and subtle; they should not attract attention
  - Bulky and complex designs should be avoided
  - Line weights should be fine and type should be among the smallest on a map
  - Only north should be indicated (if necessary, the map user can infer the other cardinal directions)

ORIENTATION



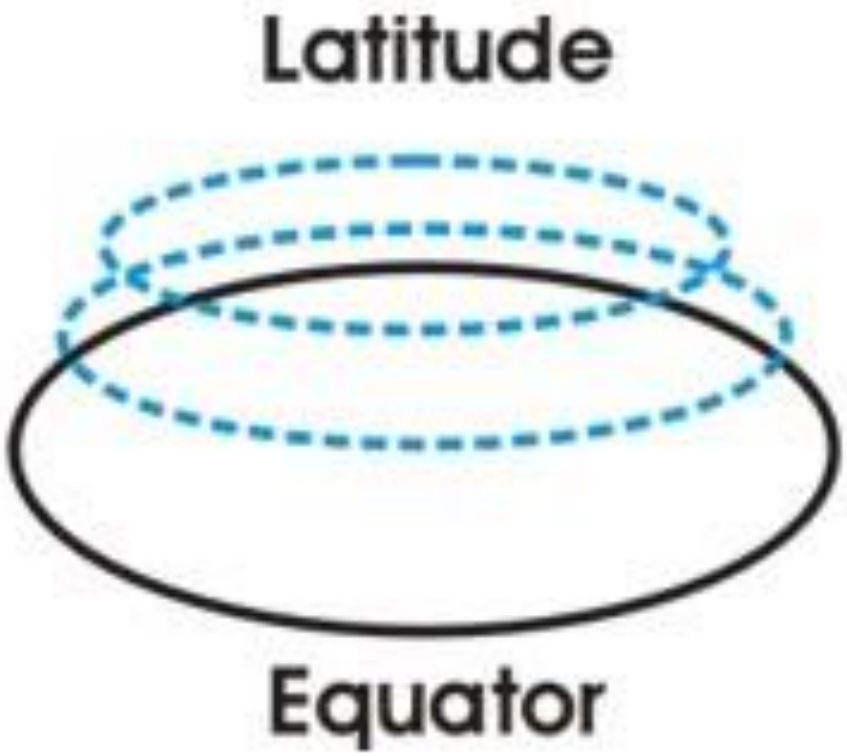
Poorly Designed

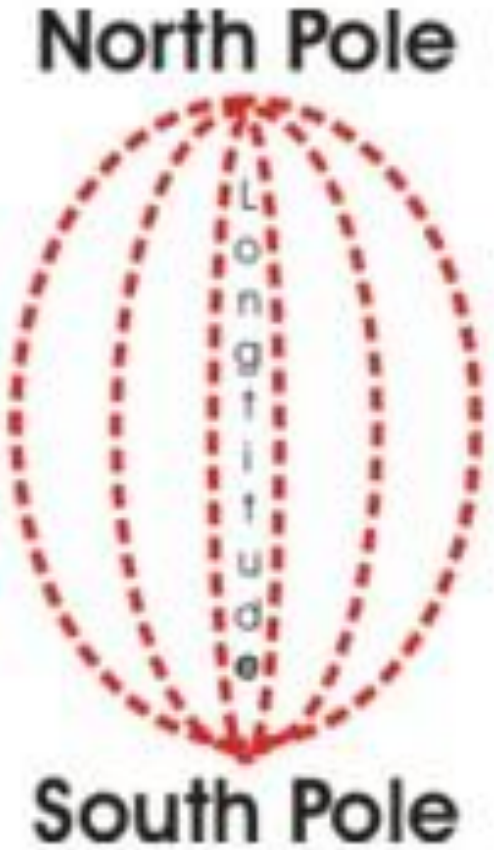


Well Designed

9- Latitude and Longitude

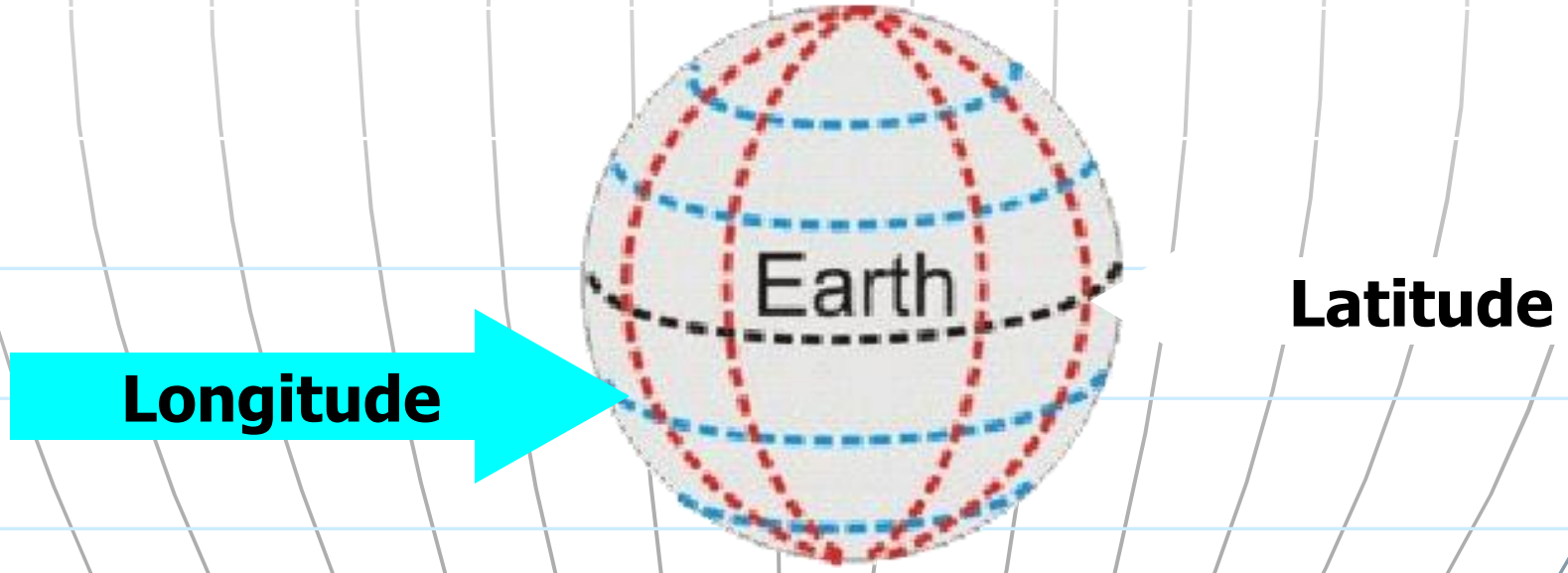
- The earth is divided into lots of lines called **latitude** and **longitude**.





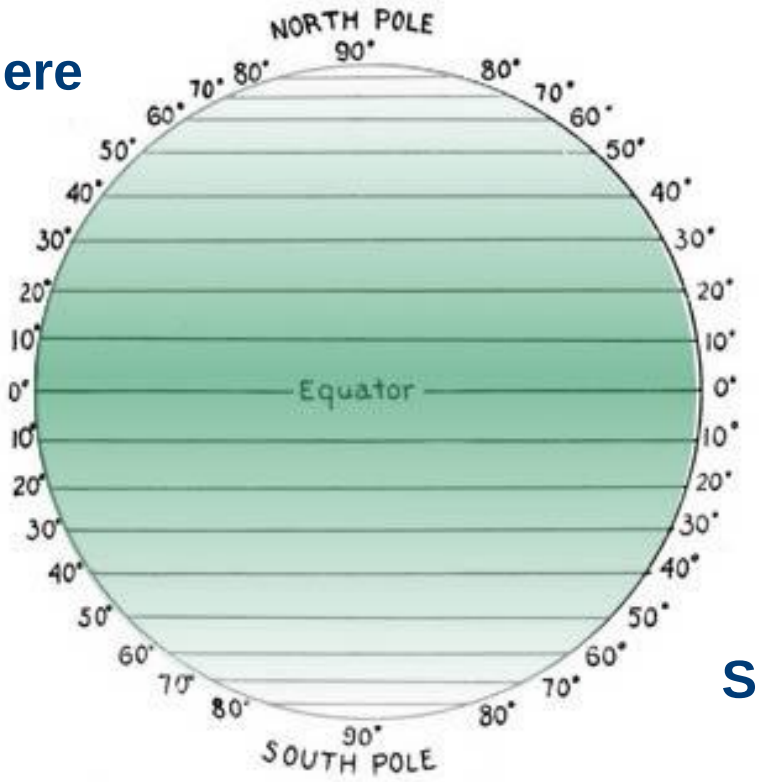
Lines

- Longitude lines run north and south.
- Latitude lines run east and west.
- The lines measure distances in degrees.



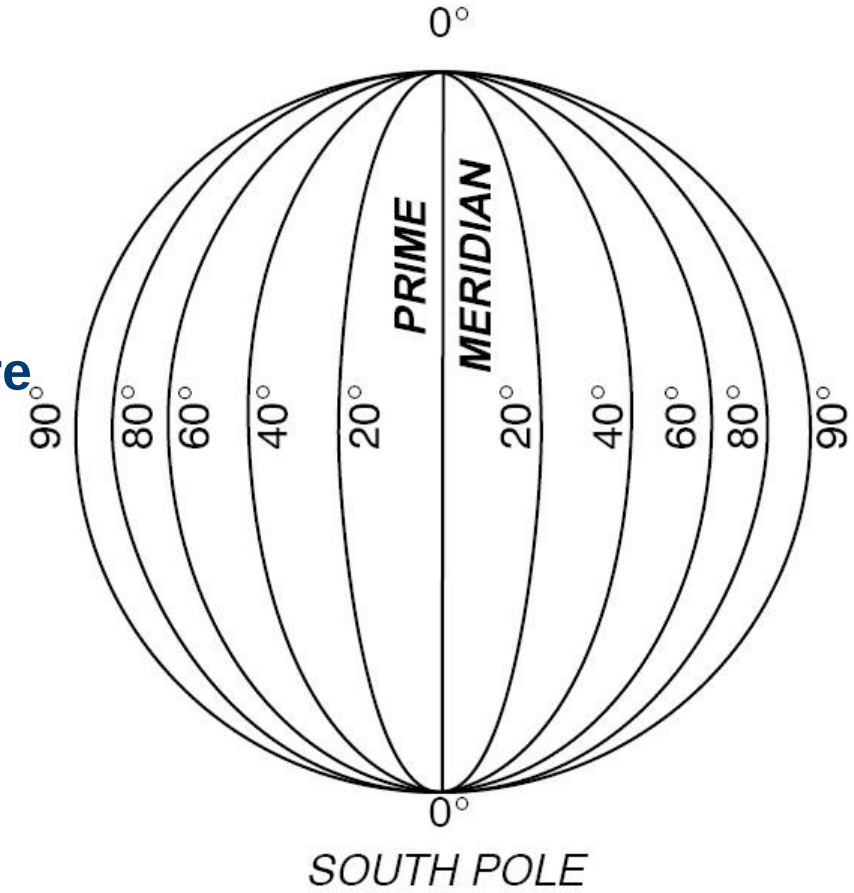
Latitude – these lines run the same direction as the equator. The equator divides the world into the Northern & Southern hemispheres. **(lat is flat)**

Northern Hemisphere



Southern Hemisphere

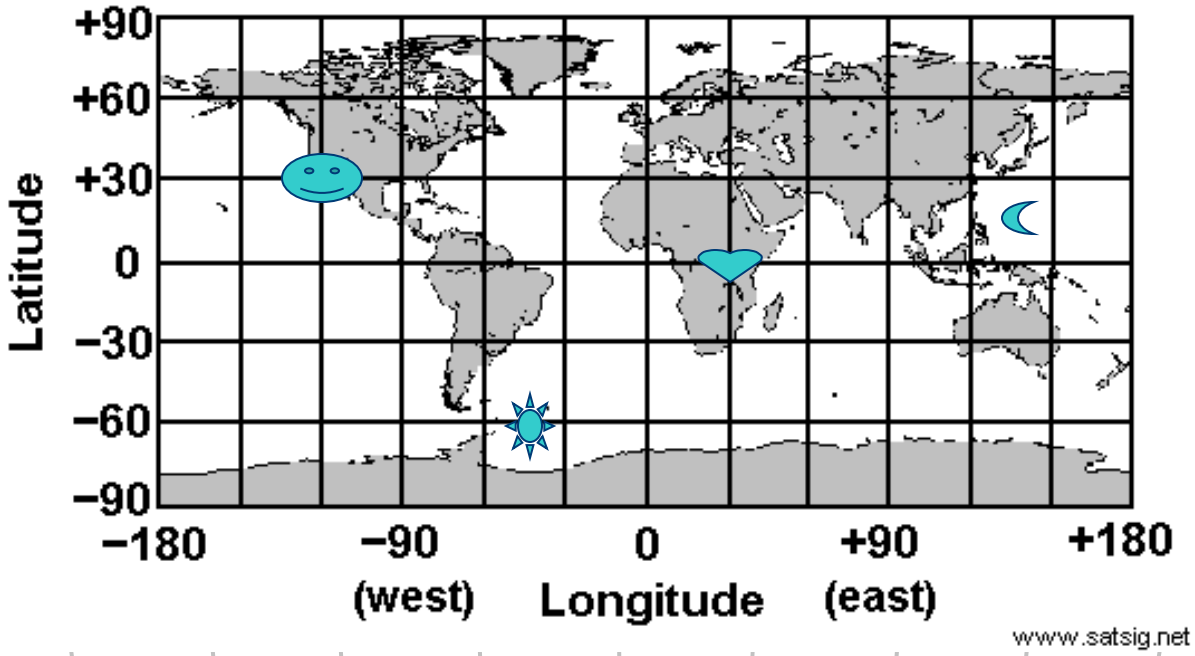
Longitude – These lines run from pole to pole. The Prime Meridian divides the world into the Western and Eastern hemispheres. (orange slices)



Western Hemisphere

Eastern Hemisphere

Finding Latitude & Longitude

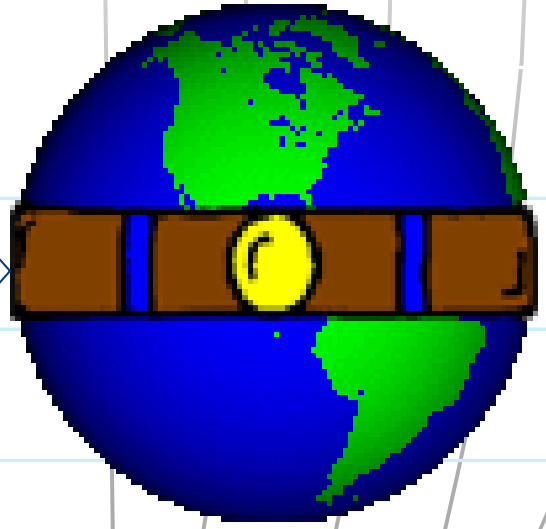


Latitude	Hemispheres	Latitude	Hemispheres
30°N, 120°W	Northern & Western	60°S, 45°W	Southern & Western
0°, 30°E	Eastern	15°N, 135°E	Northern & Eastern

Where is Lat 0 degree?

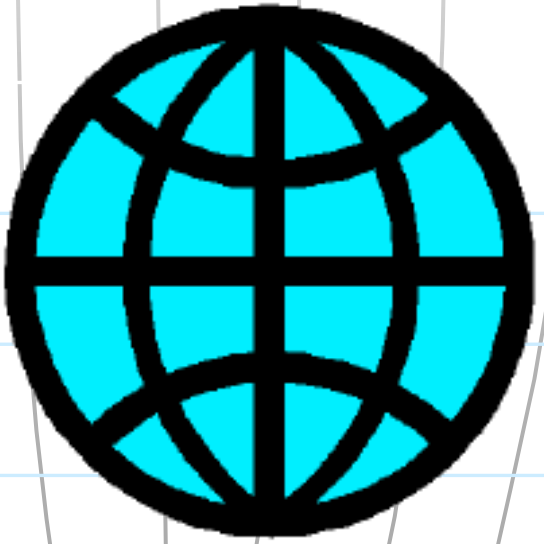
- The **equator** is 0 degree latitude.
- It is an imaginary belt that runs halfway point between the North Pole and the South Pole.

Equator

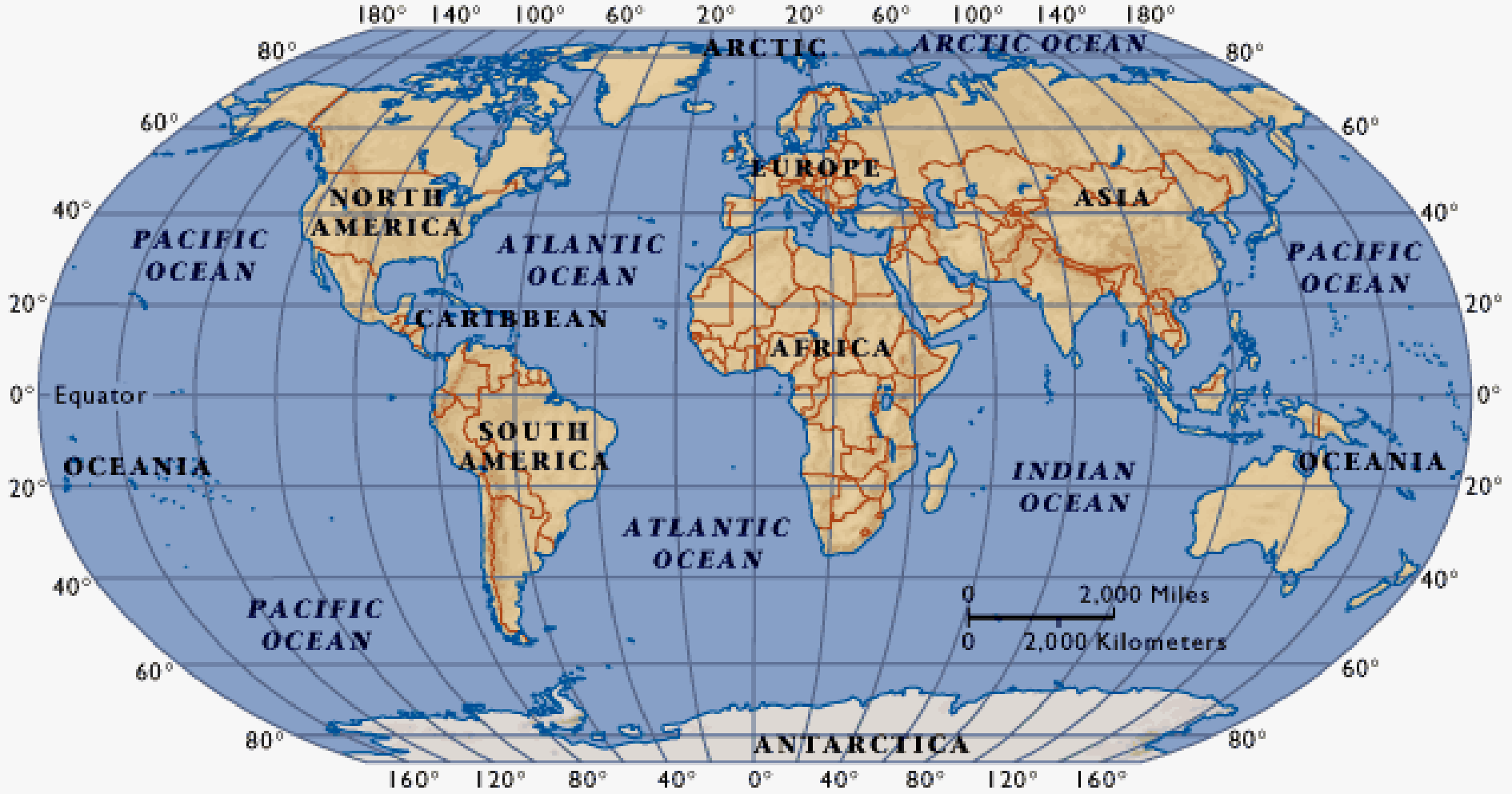


Where is Long 0 degree?

- The **prime meridian** is 0 degrees longitude. This imaginary line runs through the United Kingdom, France, Spain, western Africa, and Antarctica.



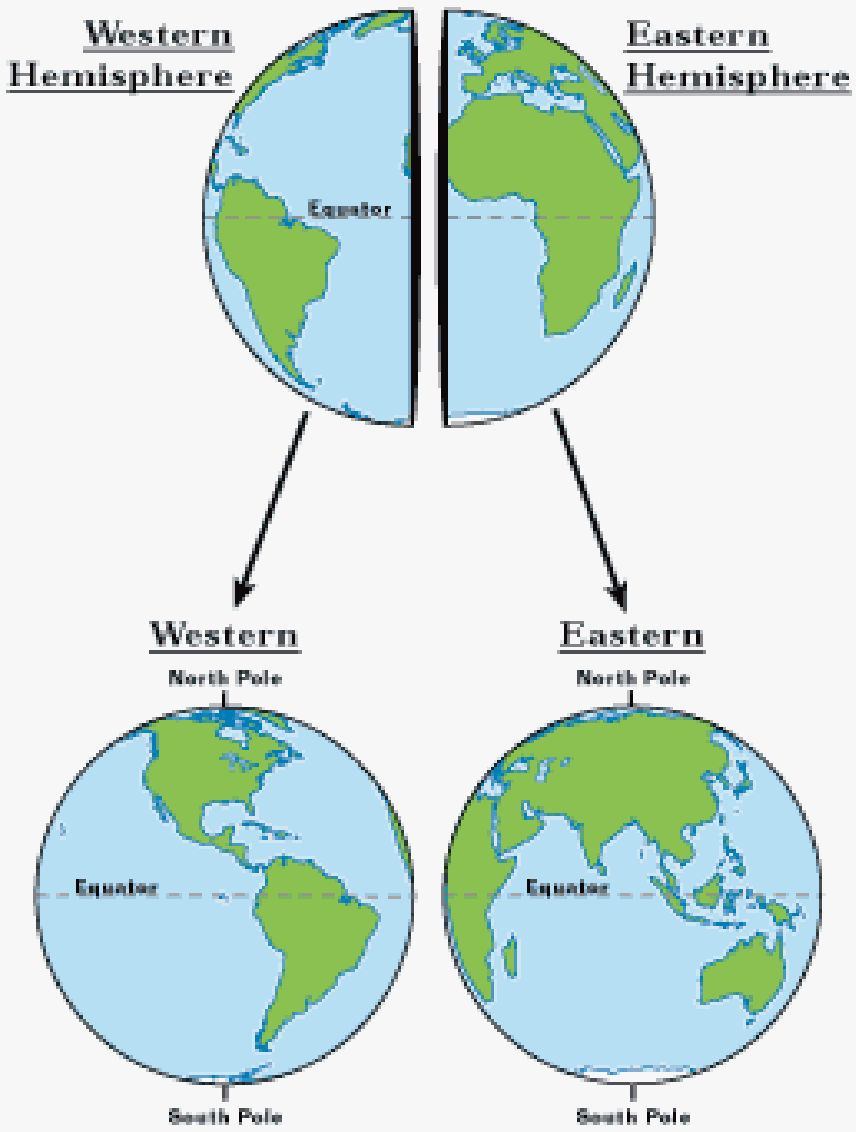
The World

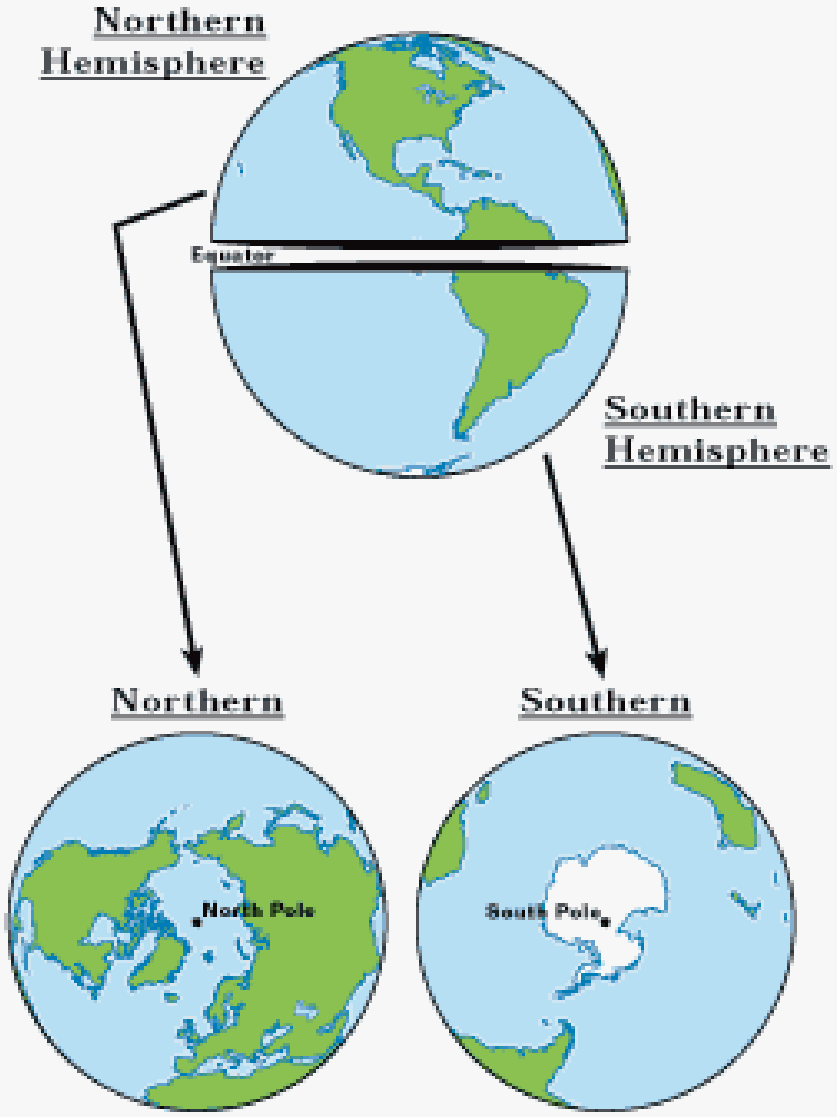


Hemispheres

- **By using the equator and prime meridian, we can divide the world into four hemispheres, north, south, east, and west.**

Hemispheres





Compass

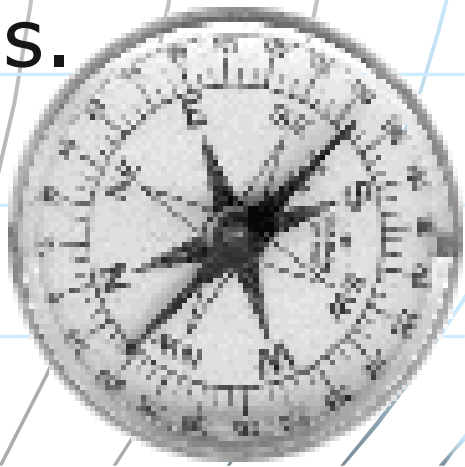
- **A compass is a tool that helps the user know what direction one is headed.**
- **On a map, a compass or a compass rose helps the user locate these directions.**

Compass Rose

- The needle on a compass is magnetized to point to the earth's north magnetic pole. Thus with a compass, a person can roughly tell which direction they are headed.
- There are four major or cardinal directions on a compass- north, south, east & west. In between are the directions northeast, northwest, southeast, southwest.

Directions

- The cardinal directions are north, south, east, and west.
- The intermediate directions are northeast, southeast, southwest and northwest.
- They help describe the location of places in relation to other places.

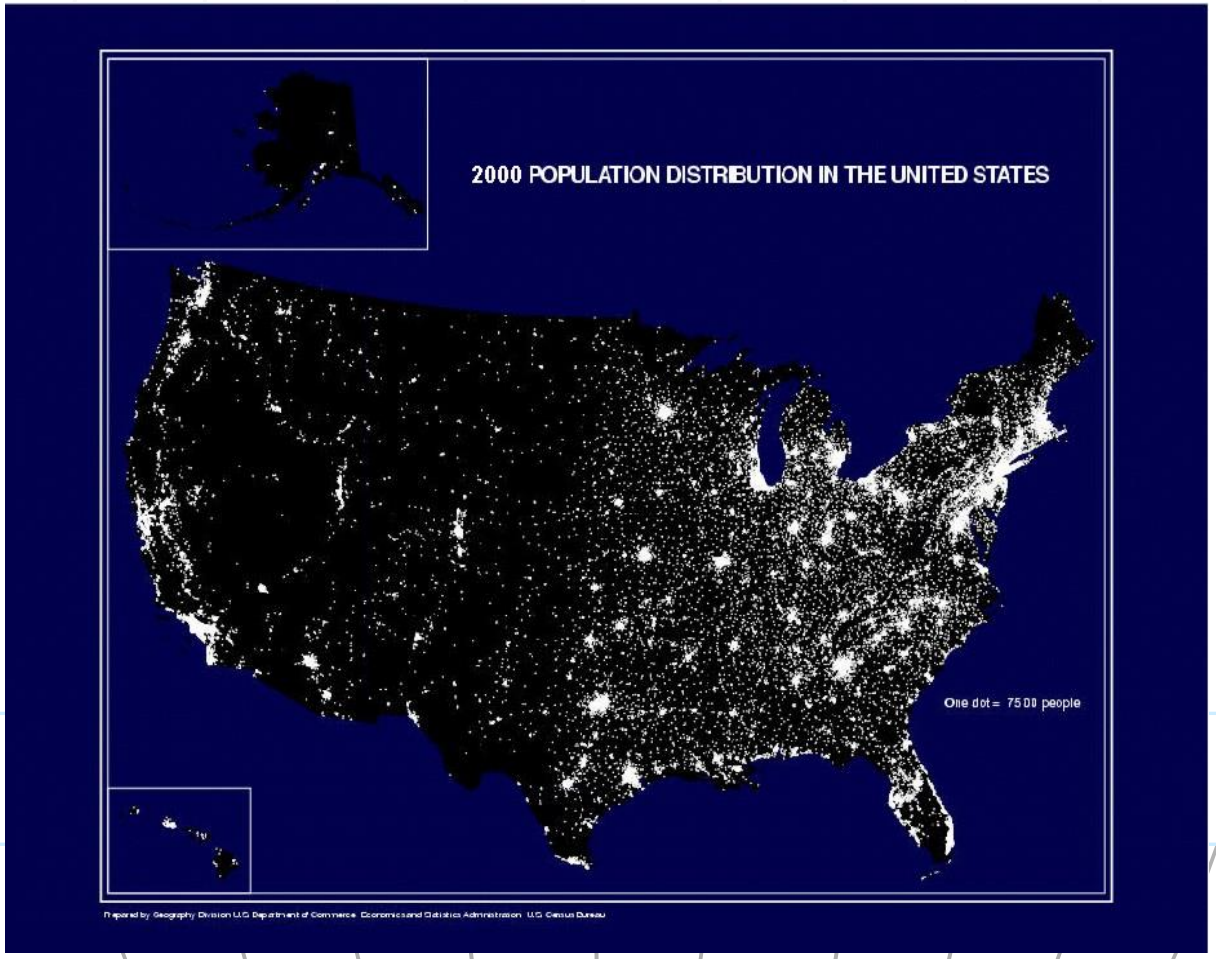


Flat surface is needed

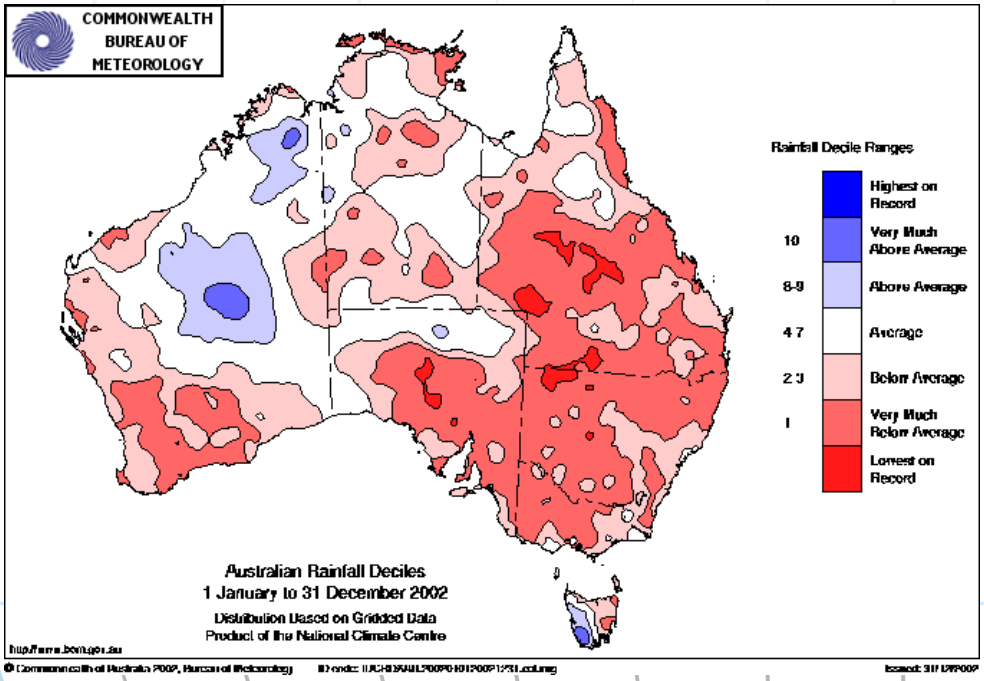
The earth is a sphere. It has to be developed into a flat surface. To do this the globe or earth has to be flattened out or *projected*.

Landform Map

Distribution Map

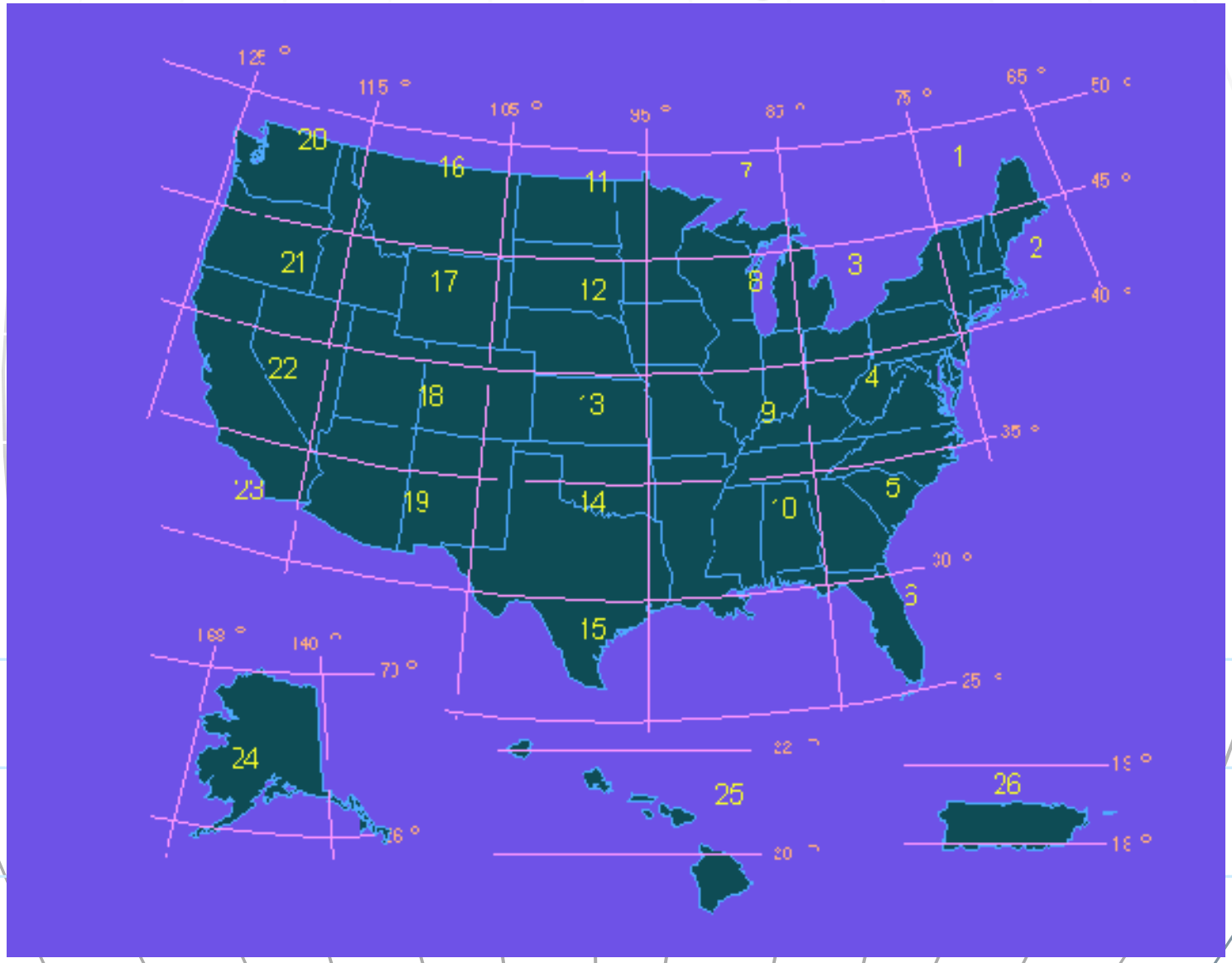


Distribution Map



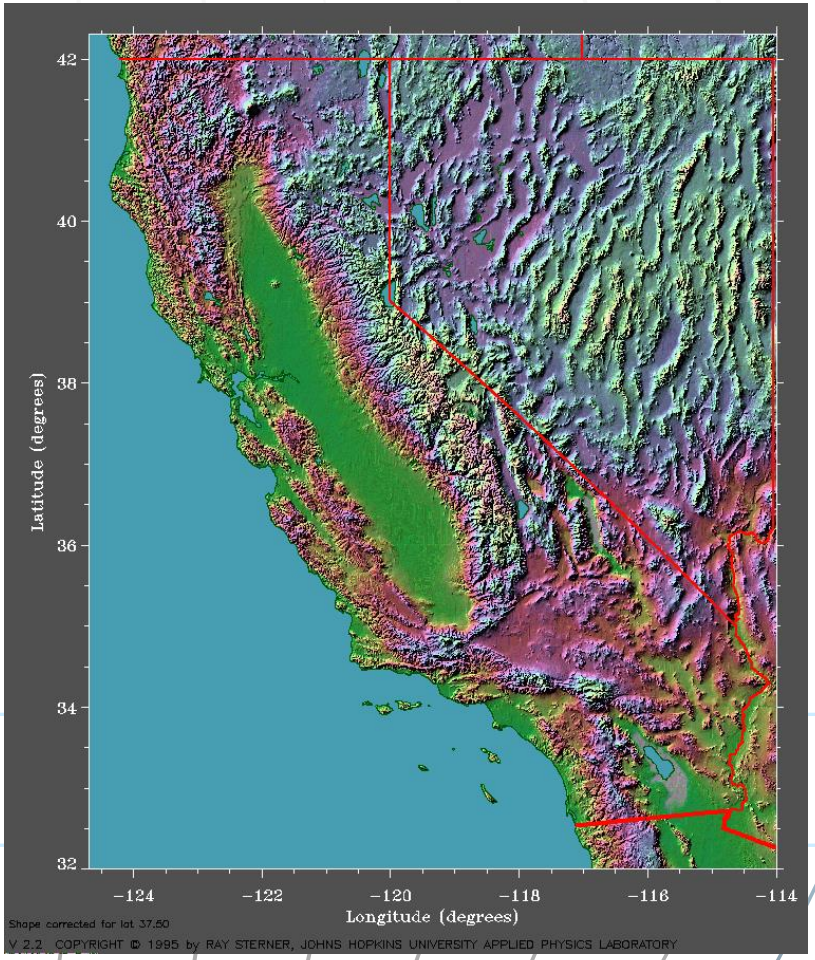
- Distribution maps show how population, rainfall, language, and religion are distributed in pars of the world.

Grid Map



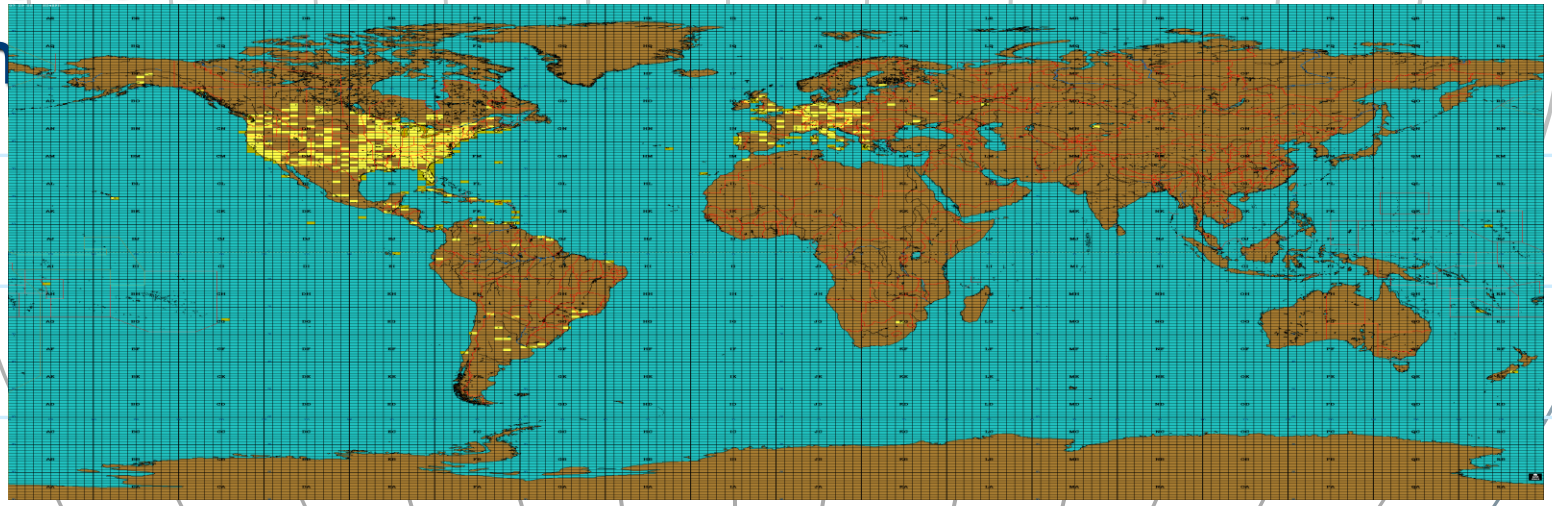
Landform Map

- Landform maps are physical maps that show how the earth's surface varies from place to place.
- They use color to show mountains, hills, plateaus, and plains.



Grid Map

- This map uses grids to help find exact locations.
- The grids are usually set up with letters and n



Time for Review

- Name one type of map and what does it show?
- What is the difference between a landform map and a political map?
- How can a grid map help you find your way around a city?

Map Review

- **What is the purpose of a Political map?**

  To show borders of countries, states, cities

Map Review

- What is the purpose of a Physical map?

Physical maps show what the surface of the world looks like.

Map Review

- Think about a hiker. What kind of map would they need?

A physical map.

- Why?

They would need to know things like where mountains, forest, and rivers are.

Map Review

- I am planning a trip to New York. What kind of map would I most likely need?

A political map

- Why?

A political map would show me states and cities. This is information that I would likely need to know if going to New York.