Geographical Information Systems – Week2

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Agenda

- Spatial Data
- Modes of Data
- Types of Measurement
- Map Scales
- Spatial Entities
- Aerial Photography Scales

Spatial Data

Primary

- Observations from monitoring the real world
  - GPS
  - Survey Information
  - Observations of the real world

Secondary

- Taken from other sources – not collected by you
  - Existing maps or data
  - Statistics Canada

Modes of Data

Temporal

- When
  - Ex. October 10, 2006 @ 9:00am EST

Thematic

- What

Spatial

- Where
  - Room H2009 Fanshawe College, London, Ontario, Canada

Types of Measurement

Nominal

- Text identifying a feature
  - Name, Phone#, Municipal Roll #
  - Cannot perform mathematical operations

Ordinal

- Establishes the order of things
  - The differences between 1st and 2nd, and 3rd are relative
  - i.e. 1st is not twice as good as 2nd

Types of Measurement

Interval

- Cannot perform meaningful mathematical operations
  - Temperature: 20ºC is not 20 X warmer than 0ºC

Ratio

- Based on absolute zero
  - Difference between entities is significant and not set
    - Population counts

Categorical and Quantities

Qualitative Data
- Relating to the quality of something (descriptive)
- Land use, tree types, zoning designations etc.
- Nominal, Ordinal, Interval

Quantitative Data
- Relating to the quantity of something (Numeric)
- Spot elevations, population, tree height etc.
- Ratio data

Map Scales

- All maps are smaller than the actual areas that they represent

- The scale gives an indication of how much smaller than reality the map actually is

- If a scale is defined as 1:2000, what scale of measurement is it?

Map Scales

3 Types of Scales

- Ratio   1:20 000
- Verbal   1cm represents 200m
- Graphical

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 0      500    1,000   1,500   2,000
              Metres
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Tip of the Week: Your instructors prefer a graphical scale. Why?

Large vs. Small Scales

Small Scale
- Covers a larger area
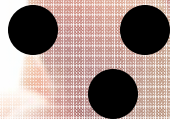- Features appear smaller
- 1:250 000
- Ex. Canada Map

Large Scale
- Covers a smaller area
- Features appear larger
- 1:500 – 1:25 000
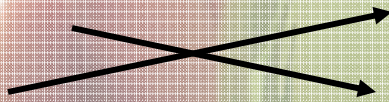- Ex. Fanshawe College Map
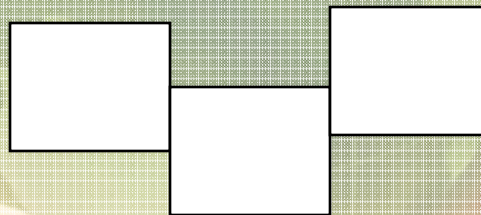
Spatial Entities – Vector Based

- Points
- Lines
- Polygons (areas)

Generalization

- All real world data is generalized in GIS
  - Remember that data in a GIS is only a model of the real world

- Scale Generalization
  - Select feature to represent
  - Is the feature best represented by a point, line, or polygon

Aerial Photography Scales

- Increased scale distortion towards the edges of photographs
- Smaller scales require fewer photos, less detail
- Larger scales require more photos, greater detail
- Selection of an appropriate scale is very important and depends on requirements