Geographical Analysis

Map Projections

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Objectives

Objective

Describe tools and techniques that are designed to support analyses that focus on datasets with a geographic component

Map Projections

Area/ Shape Distortion

- **Equivalent** – Area is similar on globe and flat map, but shape is not
- **Conformal** – Shape is similar on globe and flat map, but the area is not

<do we have a pic to illustrate this? >

Map Projections

Shape of Projections

- **Cylindrical** – projection of sphere onto a cylinder
- **Conic** – projection of sphere onto a cone
- **Azimuthal** – projection of a sphere onto a plane
- **Miscellaneous**

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Map Projections

Meridians

North-South lines (such as Longitude)

Parallels

East-West lines (such as Latitude)

Cylindrical Projections

- Characteristics:
  - Straight meridians and parallels
  - Meridians equally space
  - Parallels unequally spaces

Mercator

Universal Mercator

Cylindrical Projections - Peters

Cylindrical Projections - Mercator

Conic Projections

Characteristics:

- Straight meridians, curved parallels
- Meridians radiate from poles
- Parallels may be equally spaces

Common conic projections

- Albers
- Lambert
- Polyconic

Conic Projections – Albers Equal Area

- Direction, area and shape are distorted away from the standard parallels
- Area and directions are true only in limited portions of a map

Azimuthal Projections

Characteristics:

- Straight or curved meridians, curved parallels
- Meridians radiate from poles
- Parallels may be equally spaced

Azimuthal Projections - Orthographic

- Simplest form is orthogonal projection
- Adequate only for very small areas
- Scale and area distortion increases as distance from the tangent center increases

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