

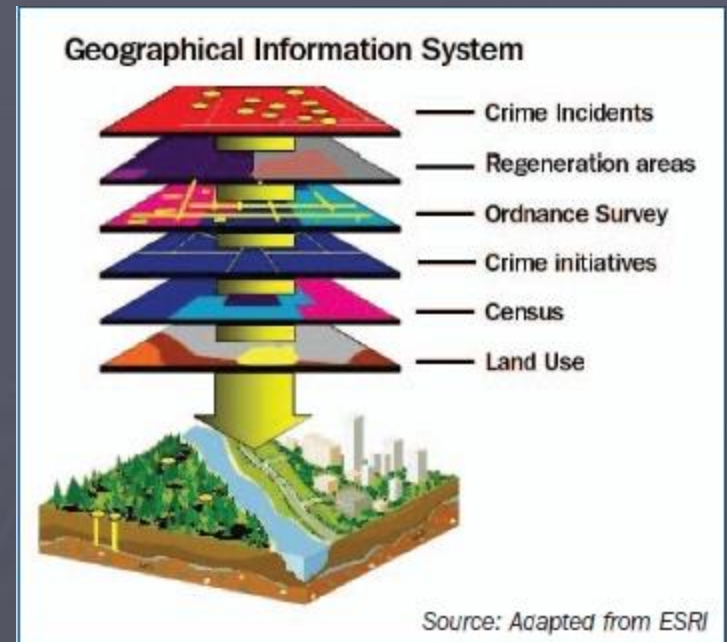
Introduction to GIS

Geographic Information Systems
(GIS)



GIS Basics

- GIS uses computer programs to collect, store, analyze, and share geographic data
- GIS allows users to view relationships and identify patterns more easily with different layers



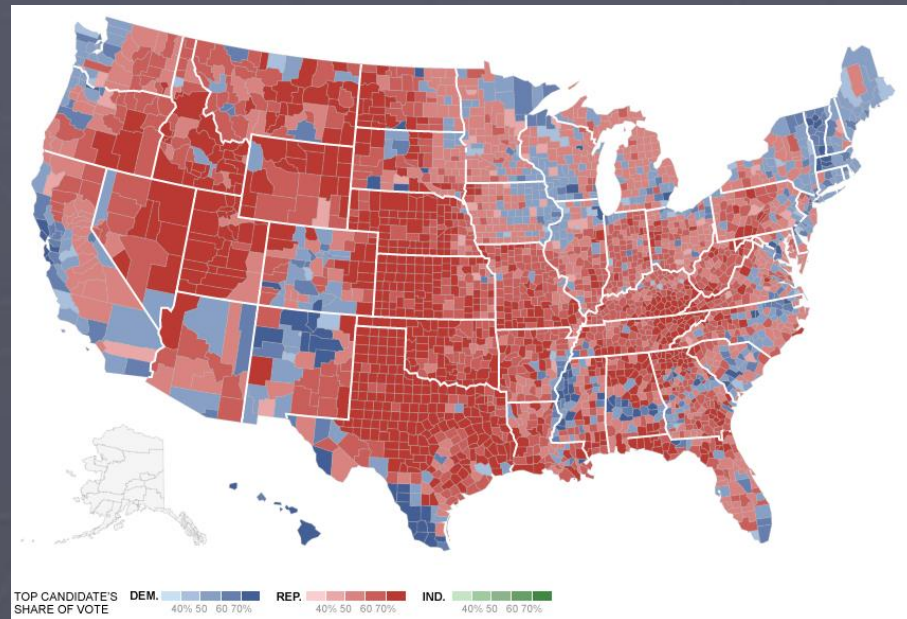
GIS Layers

- Layers are different bits of data that are placed on top of each other
 - GIS uses two or more layers to identify patterns and relationships



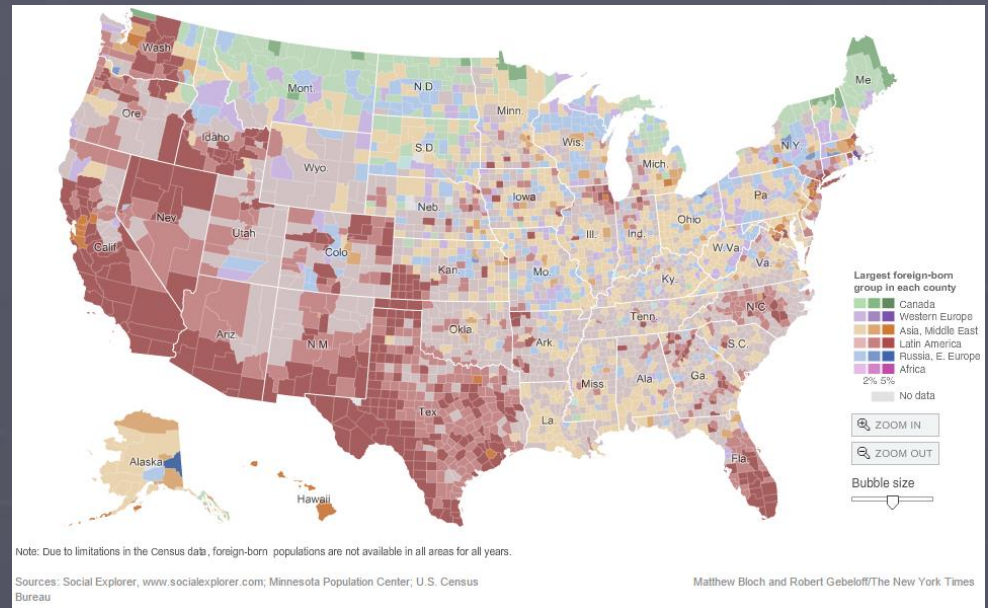
Understanding Patterns and Relationships

- Spatial Patterns: Identifiable connections that are repeated
 - Ex. Metro areas more typically vote Democrat, while rural areas vote Republican



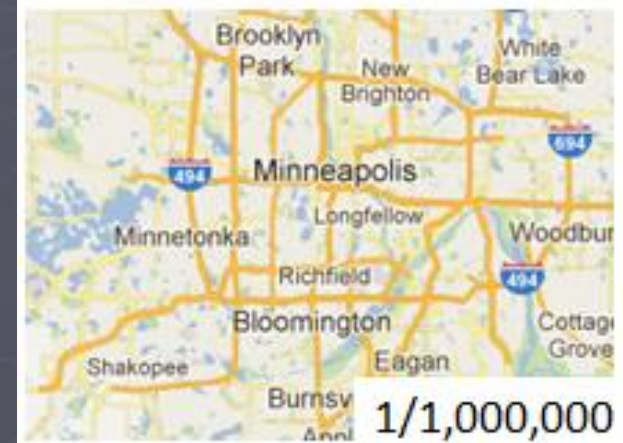
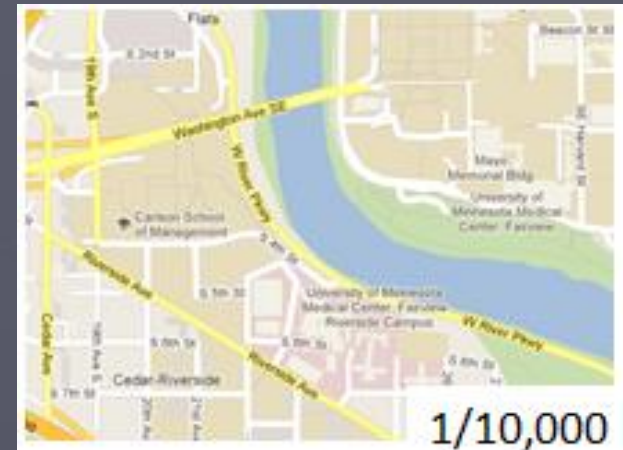
Understanding Patterns and Relationships

- Spatial Relationships: Connections between different data sets as connected to their physical geographic locations
 - Ex. The SW United States experiences more immigration from Latin America, while the NE has more Immigrants from Canada




Examining Scale

- Scale is the size of the area being examined
 - Large Scale: Small area, large amounts of detail
 - Small Scale: Large area, small amounts of detail
- Scale is representation between map and real world proportions



Functions of GIS: Collect Data

- Use of technology like spread sheets or GPS programs to collect geographic data
 - In the form of Latitude and Longitude Coordinates, Addresses, or Geographic Areas (counties, states, neighborhoods, etc...)
- Specialized databases used to manage and access data
 - Many “cloud based”

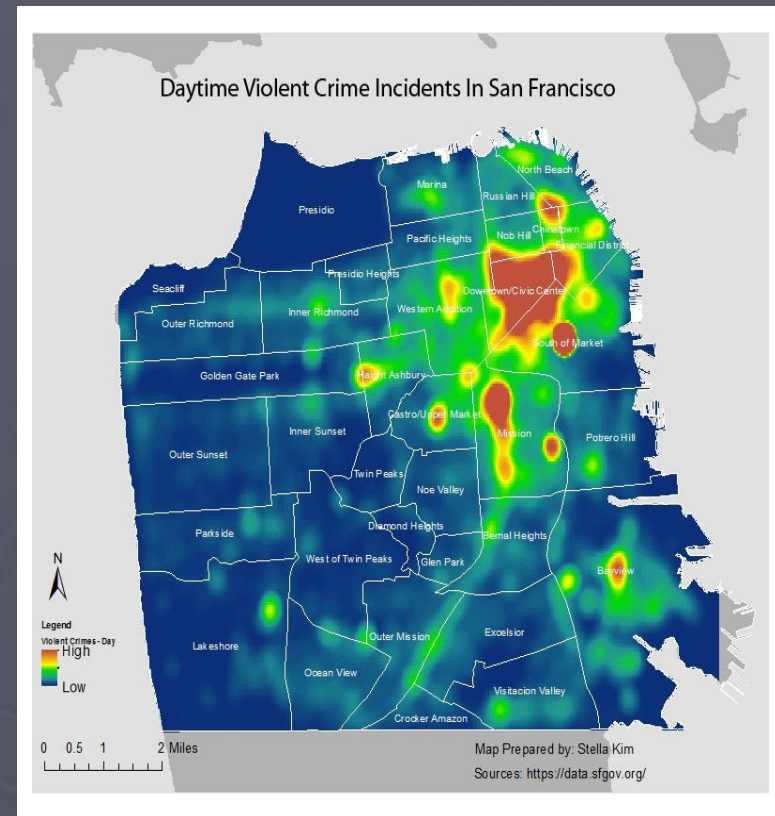


A map of Washington state showing its counties. The counties are labeled: Whatcom, Skagit, Clallam, Island, Snohomish, Jefferson, Grays Harbor, Mason, King, Pierce, Thurston, Pacific, and Lewis.

Name	FIPS	Pop90	Area	PopDn
Whatcom	53073	128	2170	59
Skagit	53057	80	1765	45
Clallam	53009	56	1779	32
Snohomish	53061	466	2102	222
Island	53029	60	231	261
Jefferson	53031	20	1773	11
Kitsap	53035	190	391	485
King	53033	1507	2164	696
Mason	53045	38	904	42
Gray Harbor	53027	64	1917	33
Pierce	53053	586	1651	355
Thurston	53067	161	698	231
Pacific	53049	19	945	20
Lewis	53041	59	2479	24

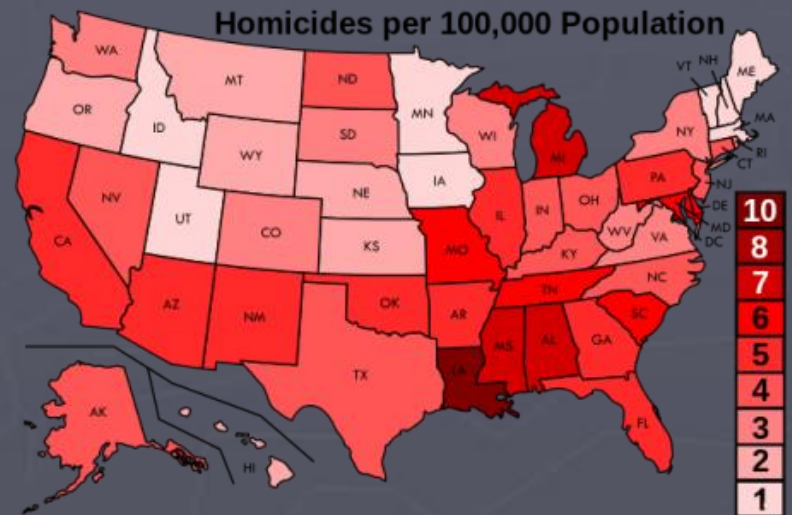
Functions of GIS: Display Data

- GIS programs allow geographic data to be shown in a number of different formats
 - Web based interactive maps
 - Static web maps
 - Printable maps
- Allows the easy display of findings and geographic information



Functions of GIS: Analyze Data

- Data can be compared to other layers to find relationships and patterns
- Can change and manipulate layers to see connections better and look for relationships
- Answer geographic questions



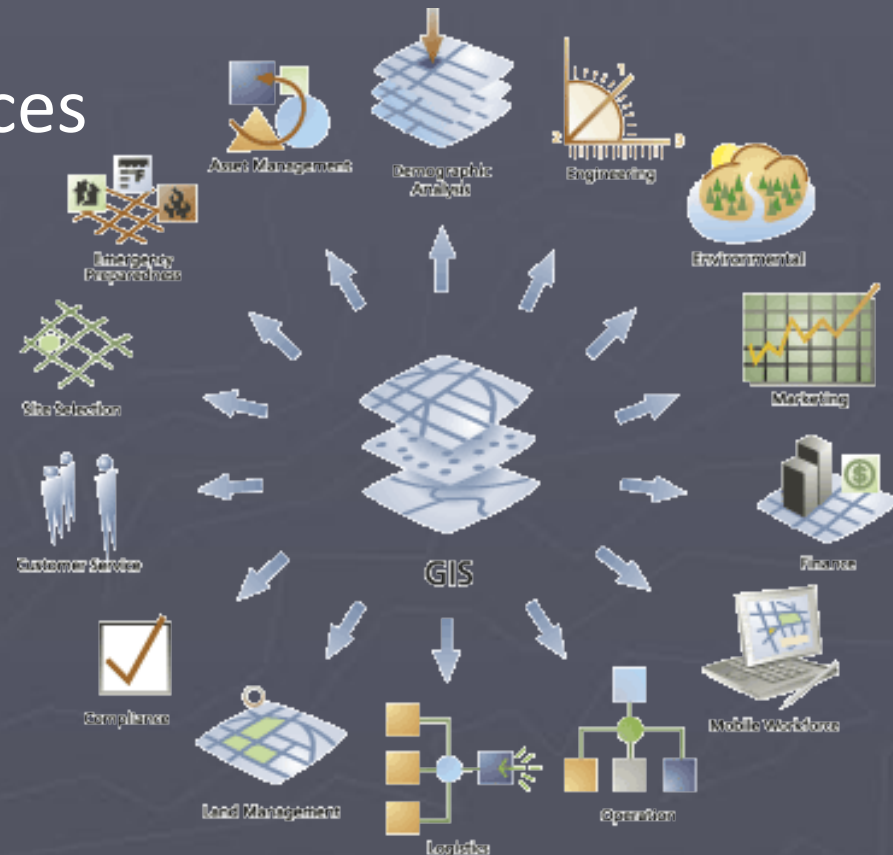
Functions of GIS: Share Data

- Can share data publically or privately
 - With everybody, or within an organization
- Quick easy display of data
 - Share pictures, links, or on social media



Industries Using GIS

- Business
- Government
- Health and Human Services
- Natural Resources
- Public Safety
- Transportation
- Utilities and Communication



Sources

- <https://uspatial.umn.edu/>
- <http://www.esri.com/>



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