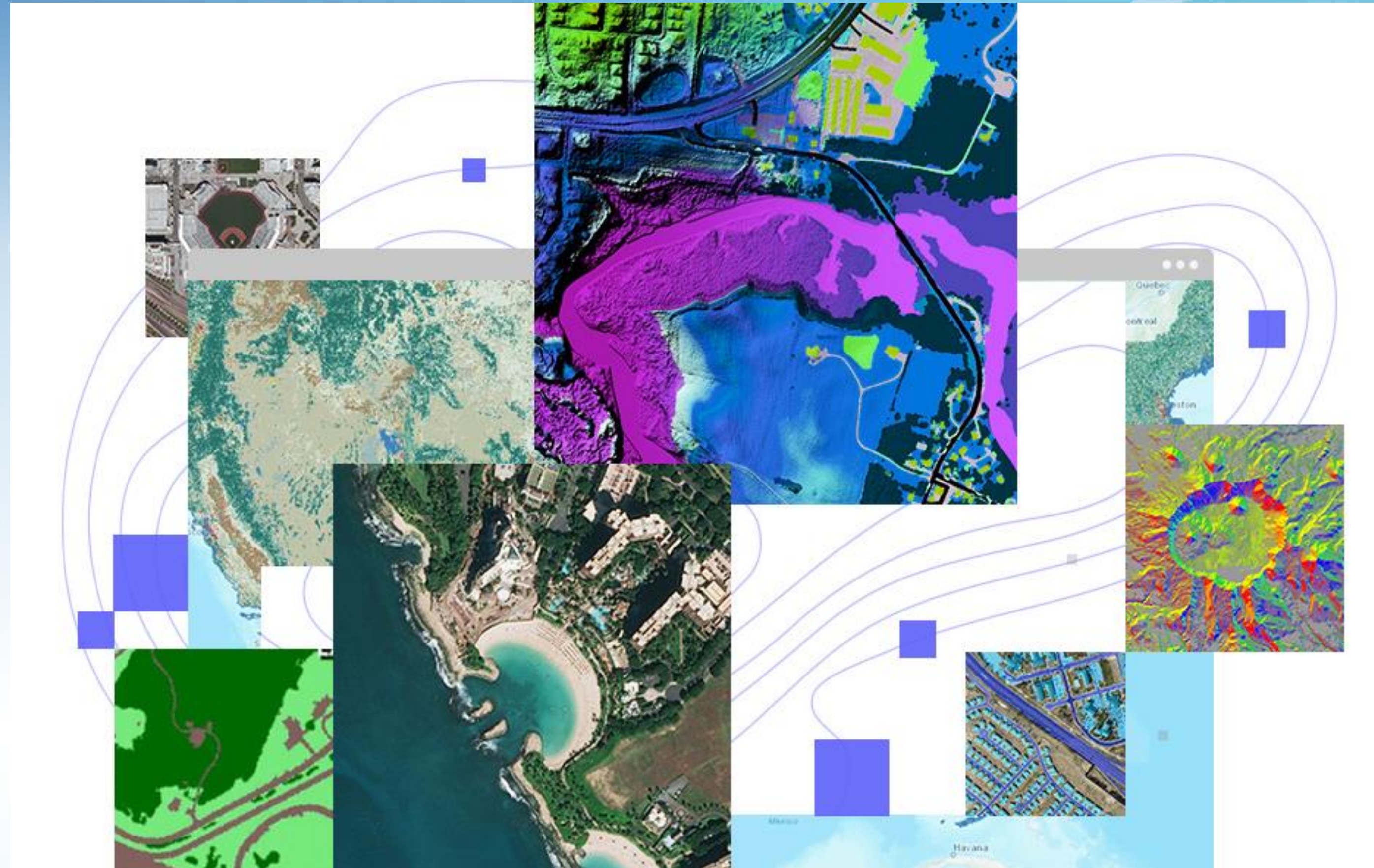




SPREP

Secretariat of the Pacific Regional
Environment Programme



PRINCIPLES OF EFFECTIVE MAP DESIGN

Presenter: Vani Koroisamanunu

CARTOGRAPHY PROCESS - Outline

The cartographic process is composed of five steps.

Step 1: Define purpose and meaning of the map.

- **The Message:** What exactly you want to convey.
- **The Audience:** Who the map user will be.
- **The Takeaway:** What you expect the user to gain from viewing your map.

Step 2: Choose the scale of the map.

- **Large Scale:** Shows a small geographic area with a high level of detail (e.g., 1:600,000 or larger).
- **Medium Scale:** Covers a moderate range, typically from 1:600,001 through 1:2,000,000.
- **Small Scale:** Shows a large geographic area with less detail (e.g., 1:2,000,000 or smaller), resulting in a smaller fractional value.

Step 3: Determine the map format, printing limitations you may have, and the production and reproduction of the map.

- **Map Type:** Will you create a reference map or a thematic map (and if thematic, what specific type)?
- **Display Medium:** How will the map be viewed (e.g., printed on paper, displayed on a mobile device, or used in a specific environment like a cockpit)?
- **Production Cost:** How much will it cost to create—factoring in format restrictions, color choices, and other design decisions—and does it fit your budget?

Step 4: Abstract and generalize the data.

- **Goal:** Simplify reality into a clean, readable visual image.
- **Relevance:** Include only data essential to the map's purpose; eliminate clutter.
- **Scale Match:** Reduce detail to fit the map scale so the layout stays clear, not busy.
- **Method 1 (Selection):** Display only a subset of data (e.g., major highways vs. every local street).

Step 5: Design the layout of the map.

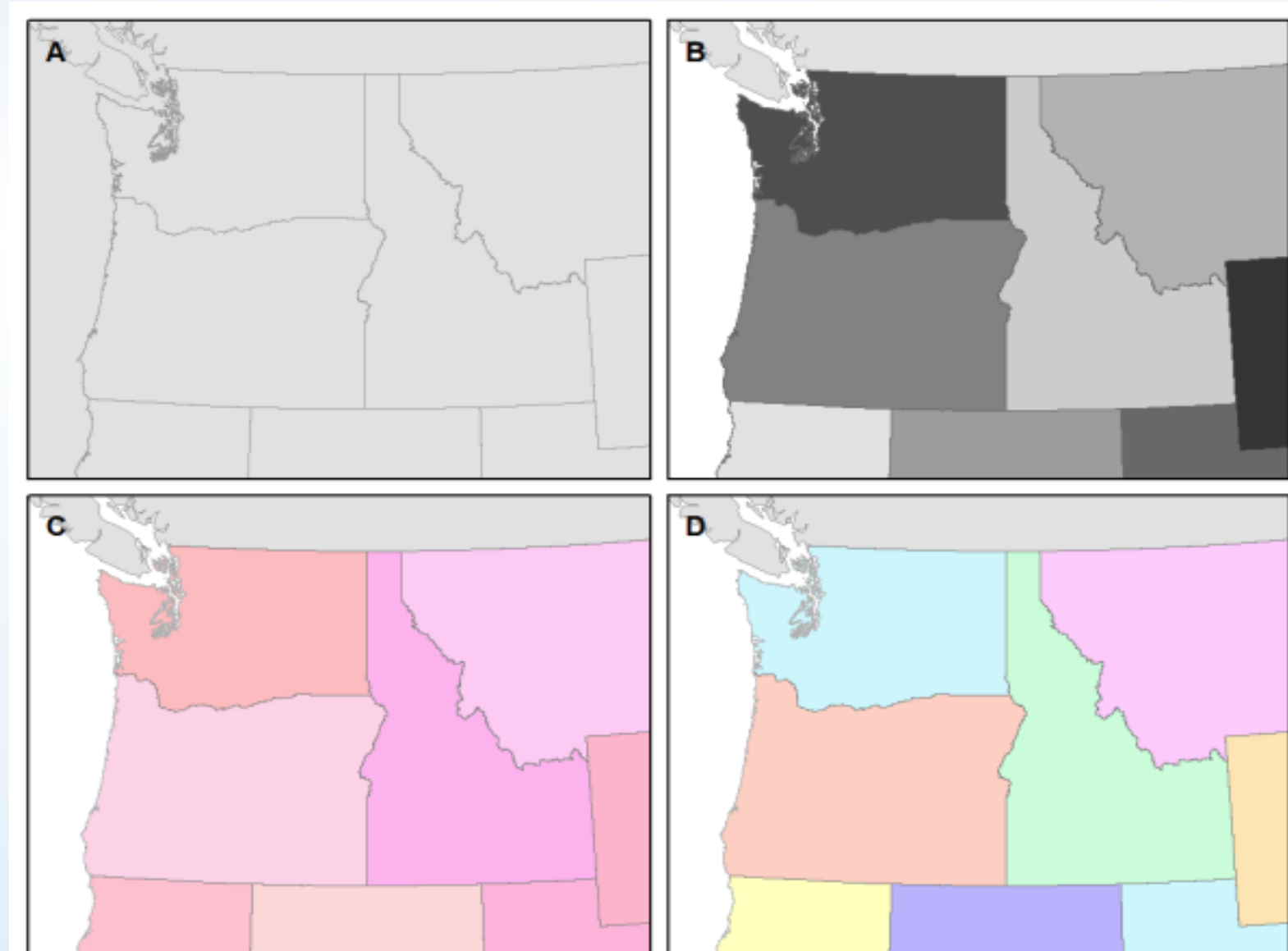
- Treat design as a creative process; drastically rearrange elements and never settle for the first draft.
- Ensure the layout fits user needs—avoid clutter, awkward placements, and nonstandard symbols.
- Accurately represent reality, keeping visual elements and language aligned on a consistent message.
- Build a clear, legible, and engaging map; test it with colleagues or family to ensure visual appeal.

PRINCIPLES OF CARTOGRAPHY

Visual Hierarchy

Directing the Viewer's Eye First

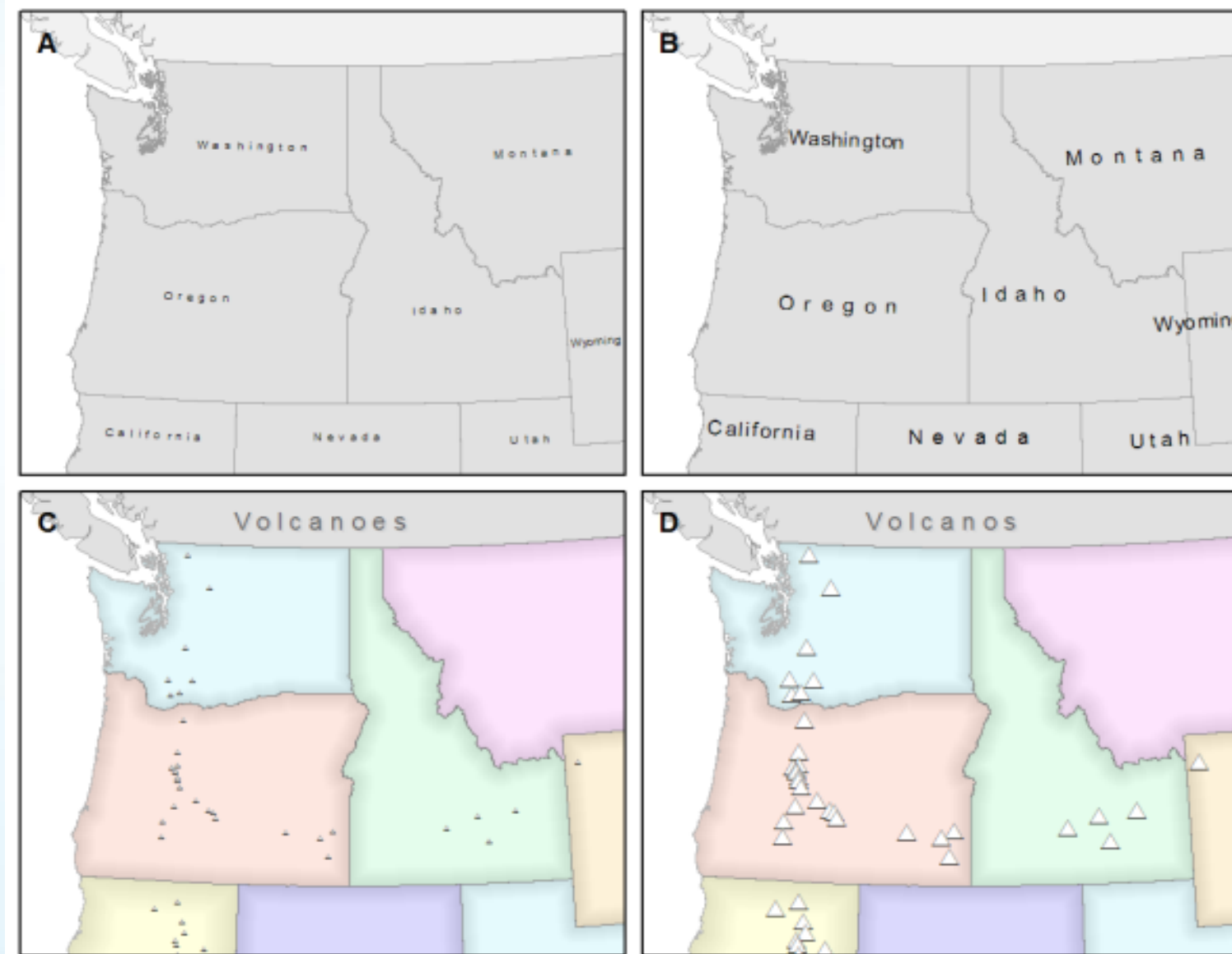
Ensure the most critical information stands out. Size, color contrast, and layer stacking should immediately show what is central to the policy question and what is secondary reference context (like base topography or municipal boundaries).



Contrast & Simplicity

Omit Needless Clutter

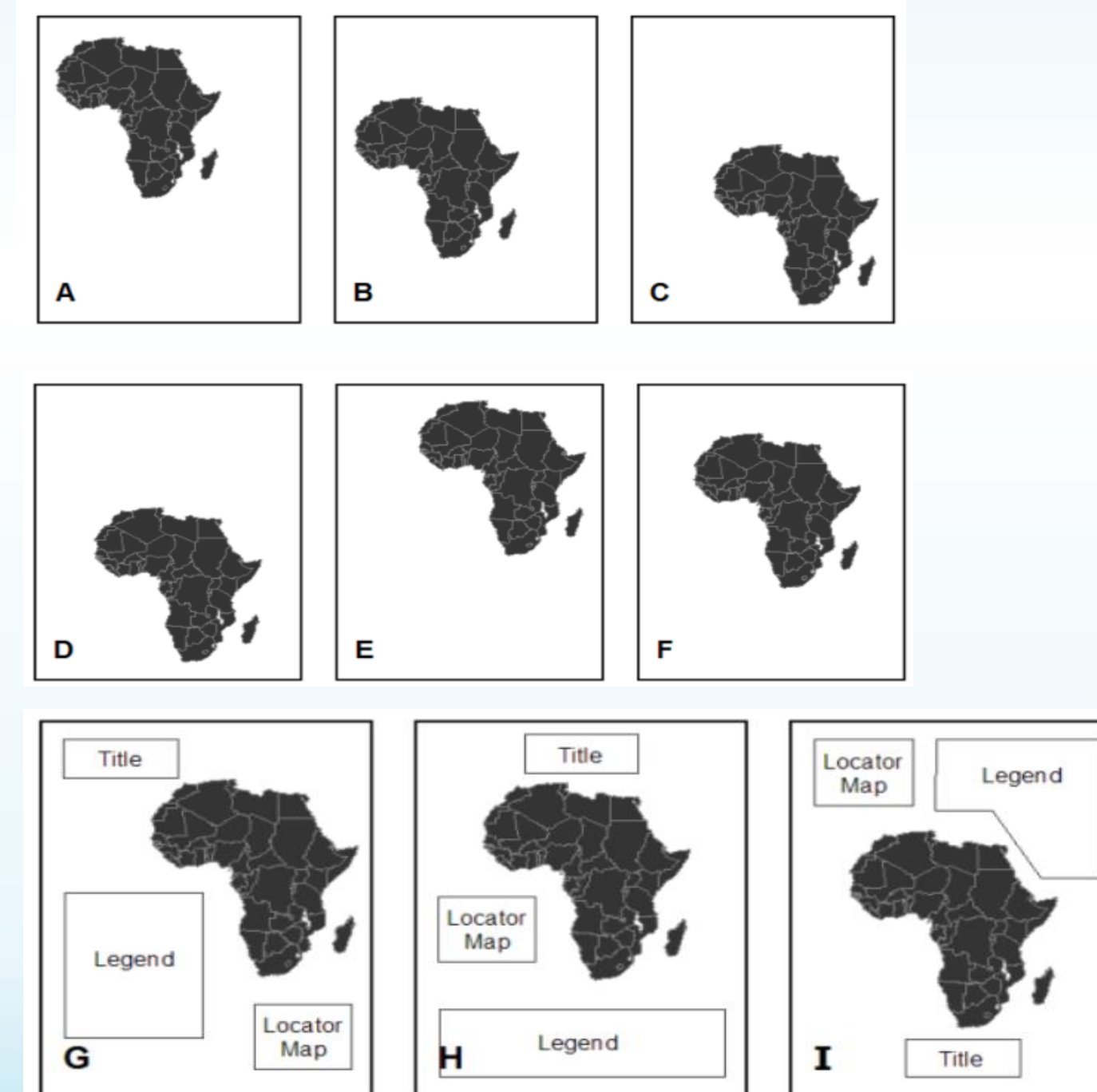
Avoid the "everything-everywhere" trap. A map that tries to show road density, soil chemistry, municipal boundaries, and mangrove canopies at once communicates nothing. Focus on one theme, keeping background layers highly desaturated.



Map Balance

Harmonizing Layout Elements

Position the main map frame, legend, scale, title, and metadata elements in an asymmetric but balanced arrangement. Let negative space frame your geographic data frame, making the map natural and effortless to read.



PRINCIPLES OF CARTOGRAPHY

1. Simplify Your Base Map

A presentation map should only contain the background detail absolutely necessary to establish context.

- **Aggressive Generalization:** Remove unnecessary roads, minor water bodies, or dense administrative borders.
- **Muted Backgrounds:** Keep your base layer light gray, beige, or dark navy. Your actual data should sit on top of this background with high visual contrast.

2. Establish a Clear Visual Hierarchy

Visual hierarchy is the order in which a viewer's eye perceives information. Your core data must immediately jump out as the most important element on the slide.

Layer Rank	Map Element	Recommended Design
1 (Highest)	Your Data (e.g., specific regions, routes, points)	Bright, highly saturated accent colors. Largest symbol sizes.
2	Critical Labels	Bold, high-contrast typography.
3	Reference Data (e.g., major cities, main borders)	Thin lines, smaller font, slightly faded or gray text.
4 (Lowest)	Base Layer (e.g., landmass, oceans)	Flat, desaturated, monolithic colors.

PRINCIPLES OF CARTOGRAPHY

3. Use Strategic, Limited Color Palettes

Color should never be purely decorative on a map; it must convey structural meaning.

- **The "One Accent" Rule:** If you are pointing out a specific target area, make that area a vivid color (like a bright teal or orange) and make every other region a uniform neutral shade.
- **Semantic Consistency:** Match colors to cultural expectations (e.g., blue for water, green for forests/parks, red for danger or high density).
- **Avoid Rainbow Gradients:** For heat maps or data steps, use a single hue that varies from light to dark (e.g., light blue to dark blue) rather than a confusing rainbow spectrum.

4. De-Clutter Your Typography

Text legibility drops significantly when projected on a screen or viewed via a video call.

- **Keep Labels Minimal:** Label *only* the specific locations you mention in your talk. Do not feel obligated to label every surrounding state, country, or landmark.
- **Visual Anchoring:** Place labels clearly next to their features. Use a subtle text halo (a faint white outline around the text) if a label has to cross over background lines or varying colors.
- **Sans-Serif Rule:** Use clean sans-serif fonts (like Arial, Helvetica, or Roboto) for map text, as they remain crisp at smaller sizes on digital displays.

PRINCIPLES OF CARTOGRAPHY

Color Ramp SELECTION

AVOID



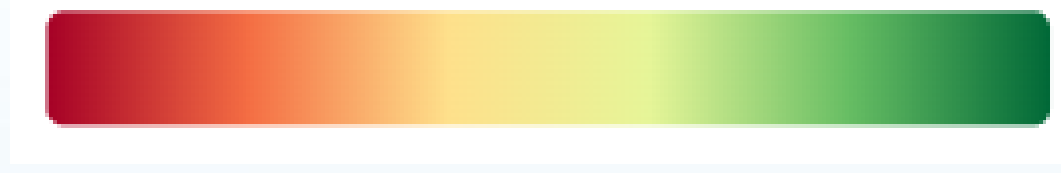
Rainbow Ramps: Avoid using multi-hue spectral maps. They lack natural perceptual ordering and introduce artificial step-boundaries that confuse decision-makers.

RECOMMENDED



Sequential Ramps: Perfect for continuous numeric data like mangrove canopy height or carbon stock. Light shades represent low density; dark represents high.

RECOMMENDED



Diverging Ramps: Highlight deviations from a critical reference point (e.g., net forest loss versus net mangrove gain over a 10-year planning cycle).

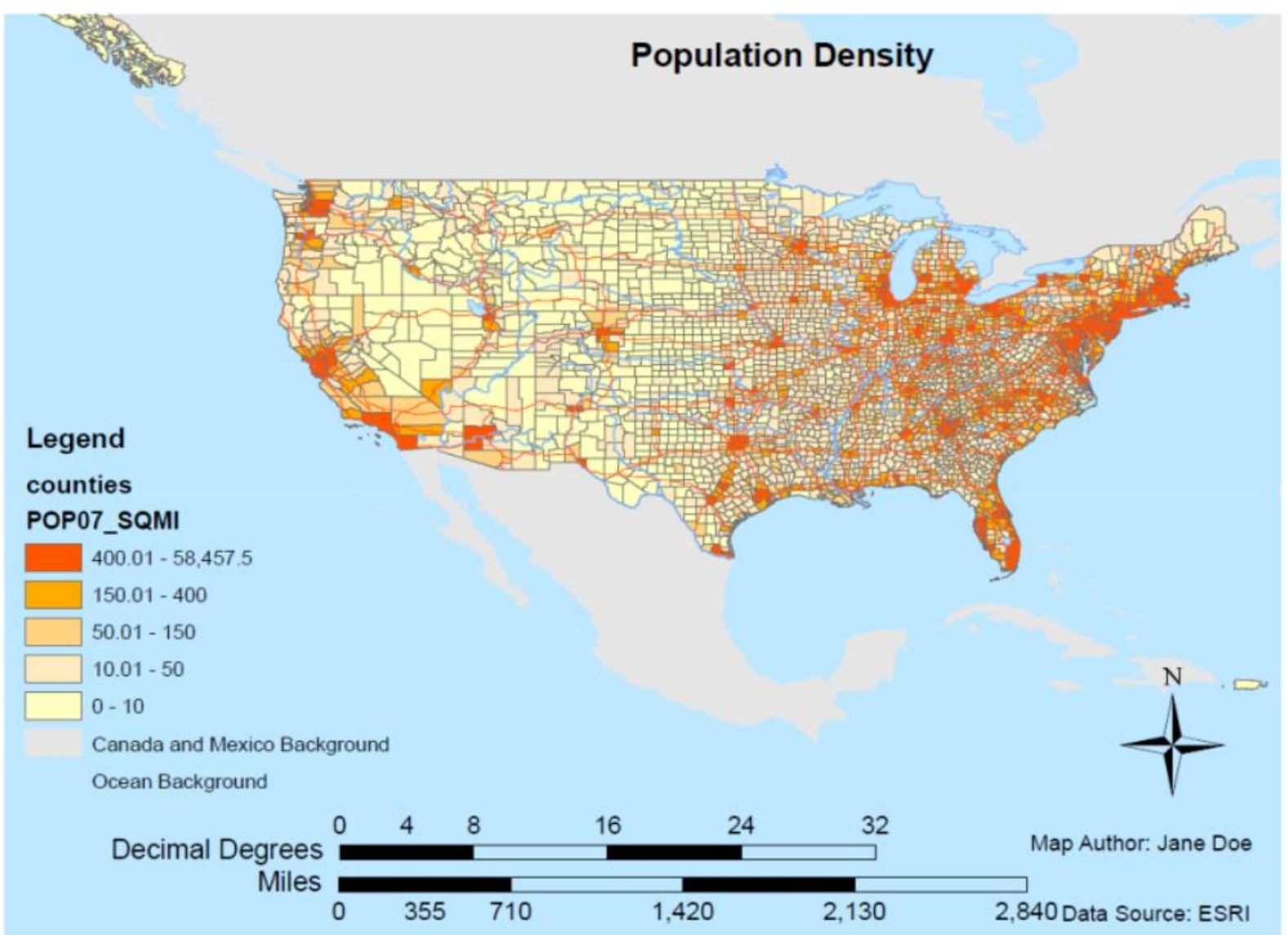
Classification & Symbology

- **Classification Schemes:** Use *Natural Breaks (Jenks)* to highlight native groupings, or *Quantiles* to show relative ranking. Keep classes under 5-6 segments.
- **Symbology Scalability:** Ensure symbology sizes are visible at multiple screen resolutions and in black-and-white printouts.
- **Thematic Clarity:** Keep qualitative legends intuitive (e.g., standard forestry/mangroves represented as green shades, and mudflats as warm earthy hues).
- **Contrast Ratio:** Maintain contrast between spatial features and the basemap layer (minimum contrast ratio of 3:1).



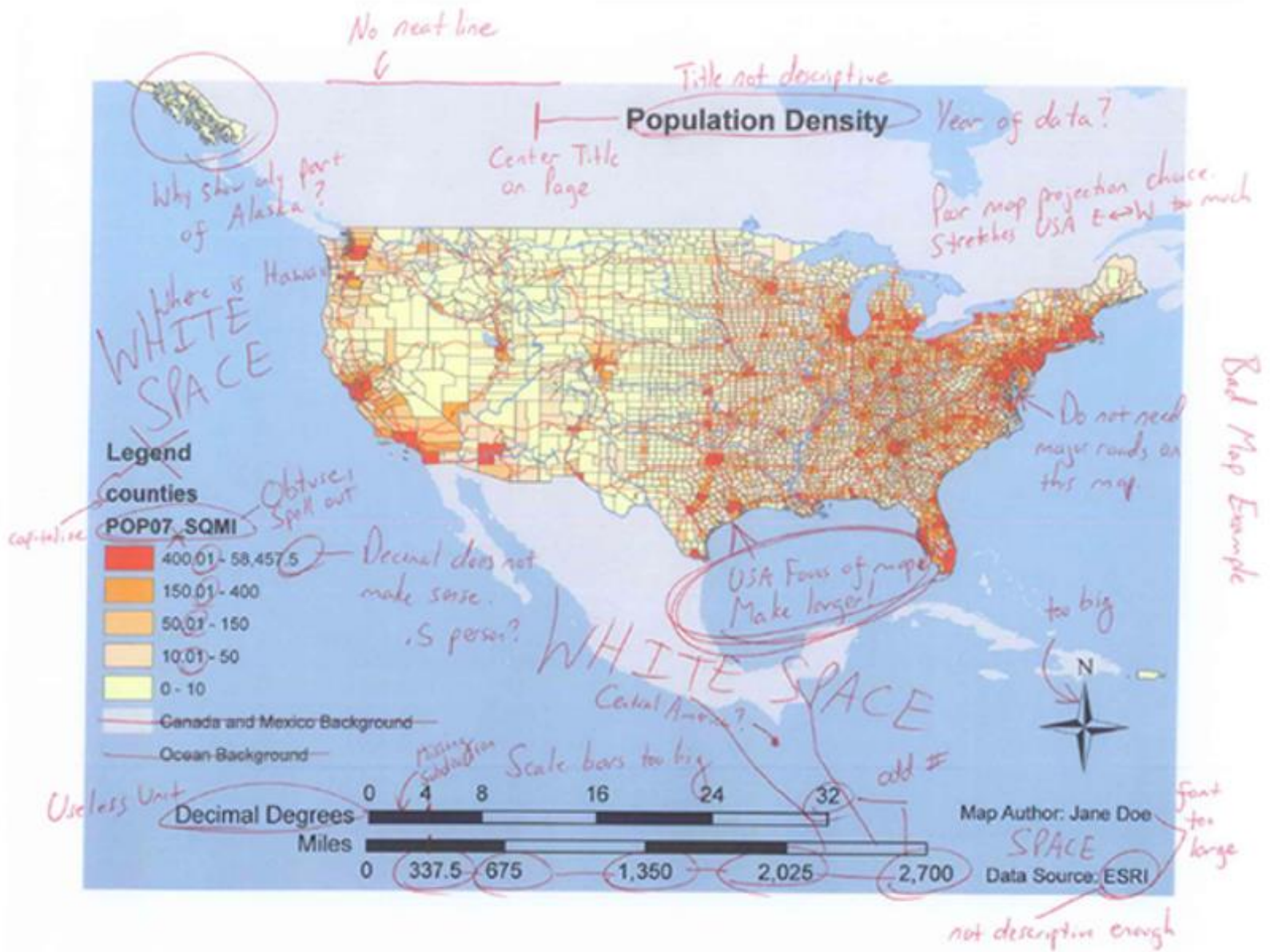
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Example Map Critique

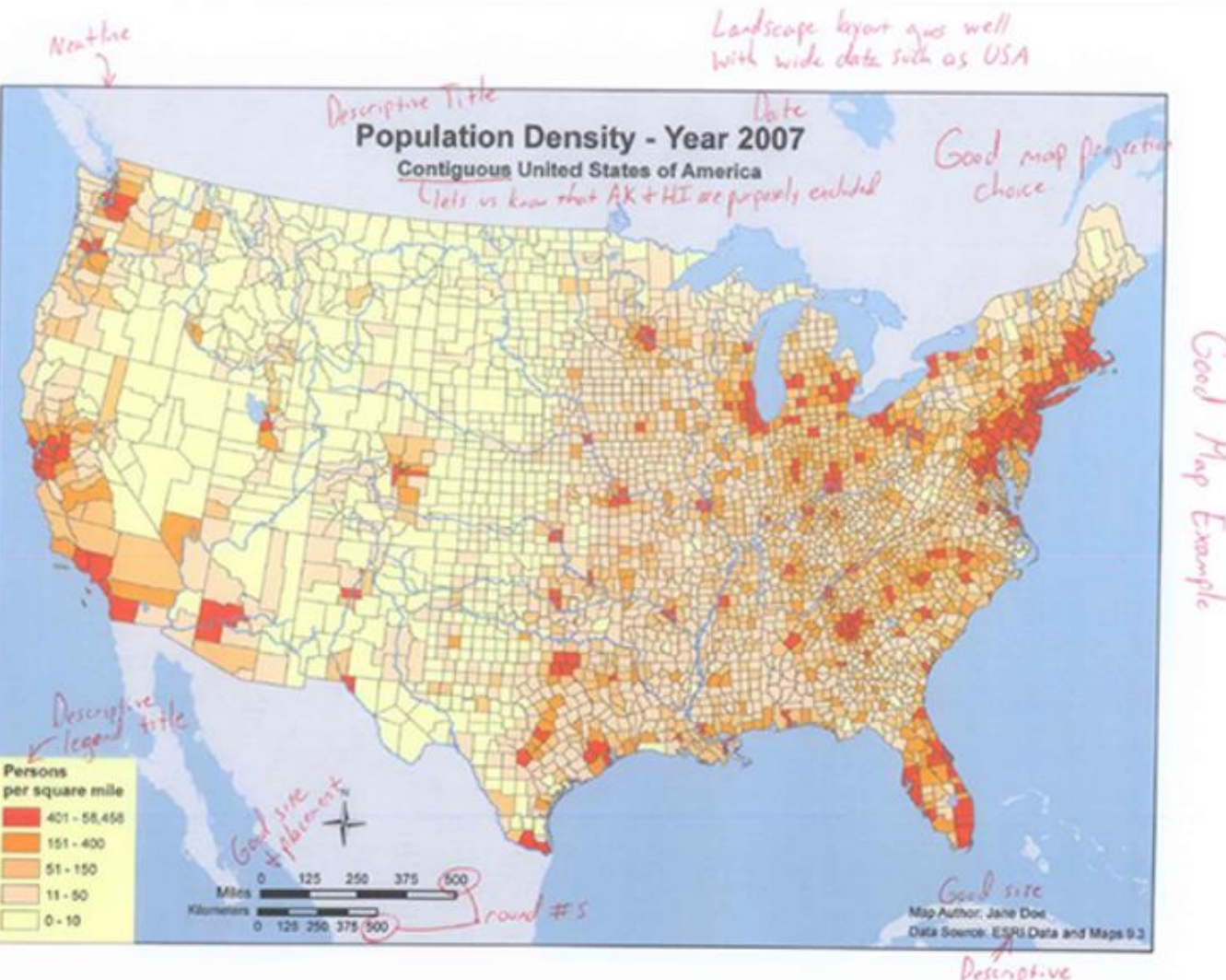


1. Overall Map

2. Map Issues Highlighted



3. Redesigned Map



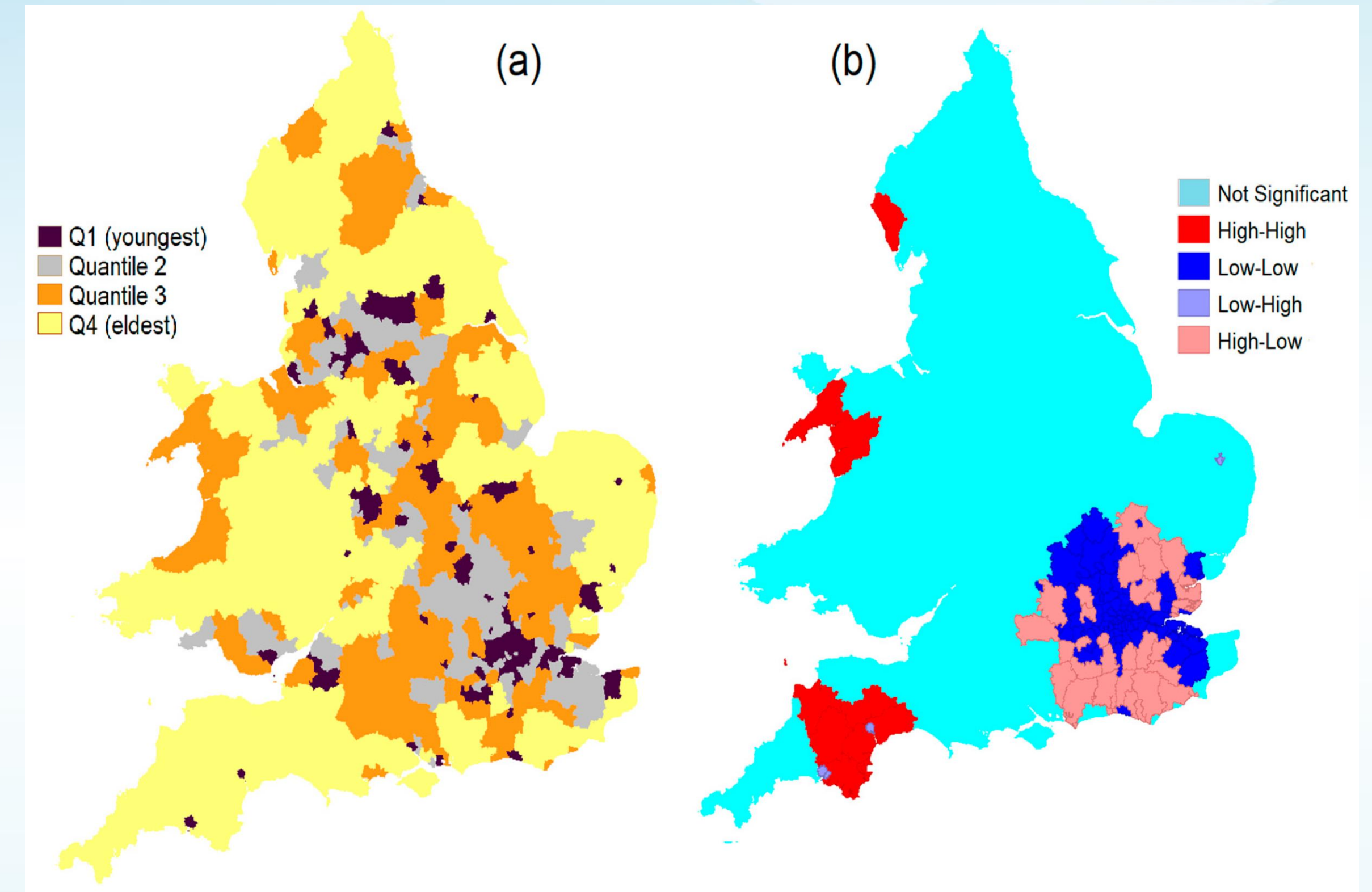
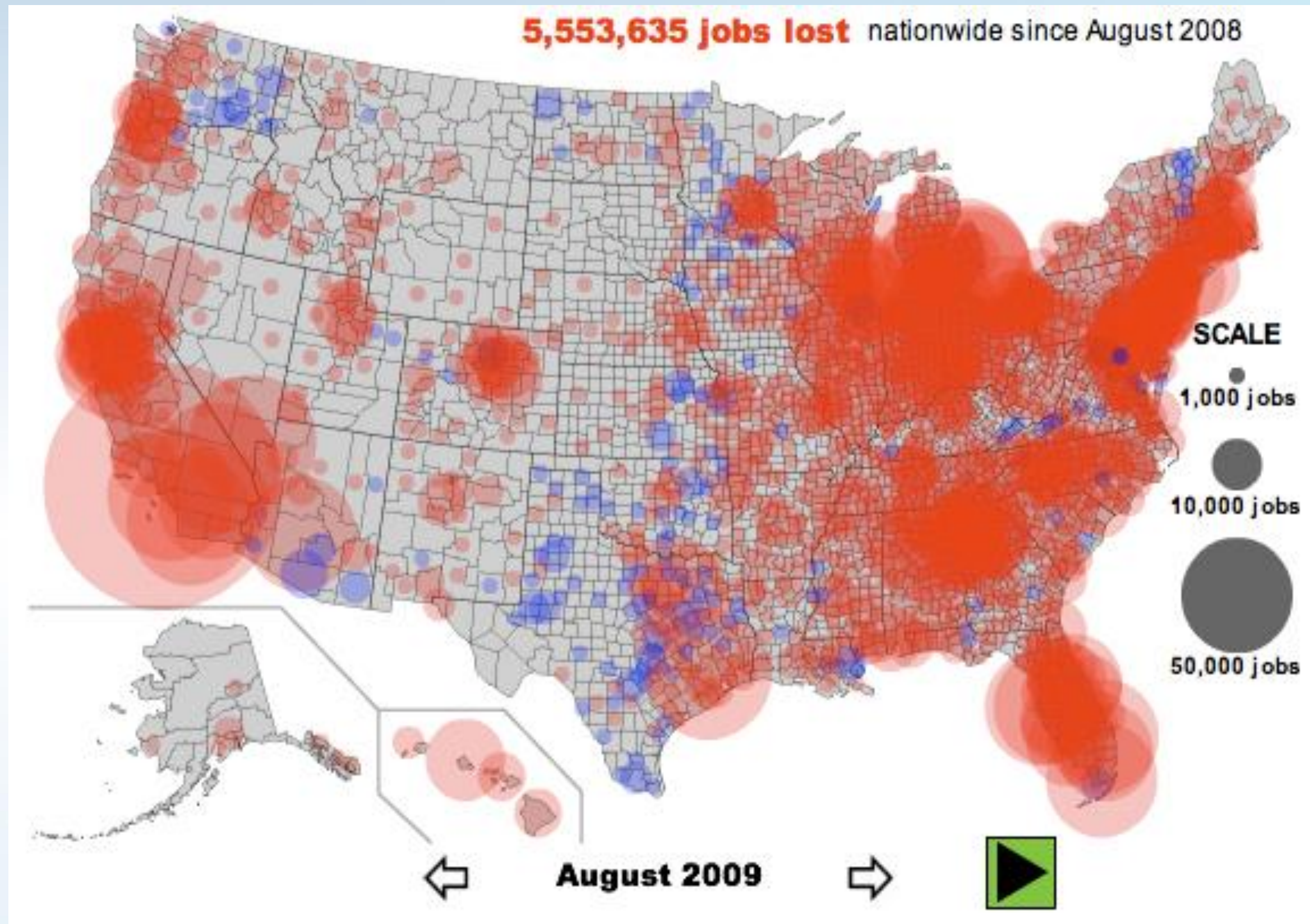


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PRINCIPLES OF CARTOGRAPHY

Example: Poor visualisation on a map





Any Questions?



Thank You