
Cartography

Why GIS needs Cartography

Presented by: Kevin Lacefield, GIS Programmer Analyst
County of Sonoma

The focus of a GIS Tech

- Creating/Maintaining Geographic Data
 - Analysis
-

“Spatial analysis is where the GIS rubber hits the road – where all the hard work of digitizing, building a database, checking for errors, and dealing with the details of projections and coordinate systems finally pays off in results and better decisions”

Michael Goodchild¹

An additional focus

Not including cartography in the process has the following issues

- Devalue the hard work already completed
- Improper interpretation of the map

The goal of any map should be to effectively display spatial data.

Key ideas about communication

1. Every map has a creator
 2. Every map has a reader
 3. Every map has a purpose
 - Typically a map does not have more than one purpose
-

“Maps become especially difficult to read when the map author or cartographer incorporates several tasks in one design. Simplicity in design is a goal and can be achieved in part by reducing the number of map-reading tasks on a single map.”

Borden Dent, *Cartography – Thematic Map Design*²

Example: ABC Maps

Key

ABC License Type (Number)

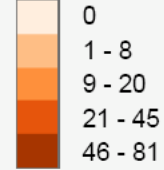
- ◆ Restaurant (86)
- Retail Store (47)
- Bar (13)
- Total ABC Licenses (146)

Key

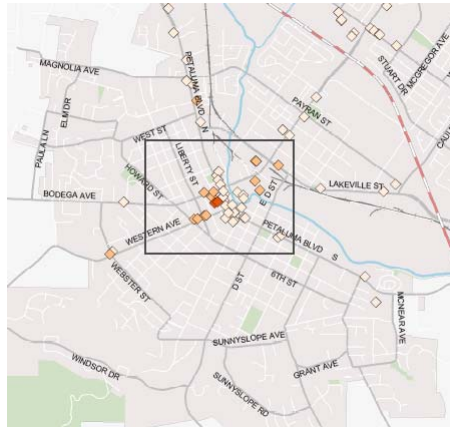
of License Violations

- 0
- 1
- 2
- 3

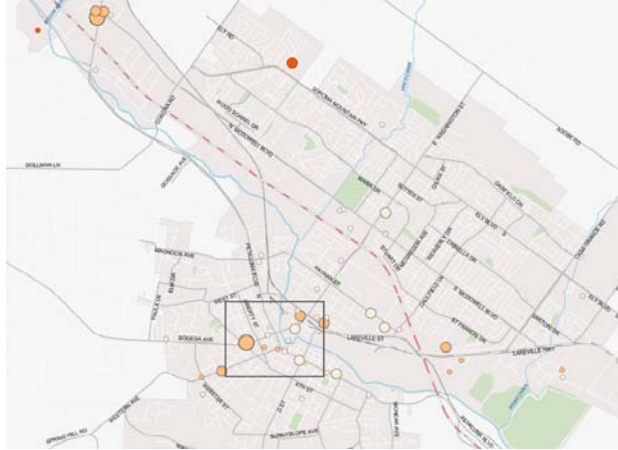
Crimes within 100 ft



Example: ABC Maps



Example: ABC Maps

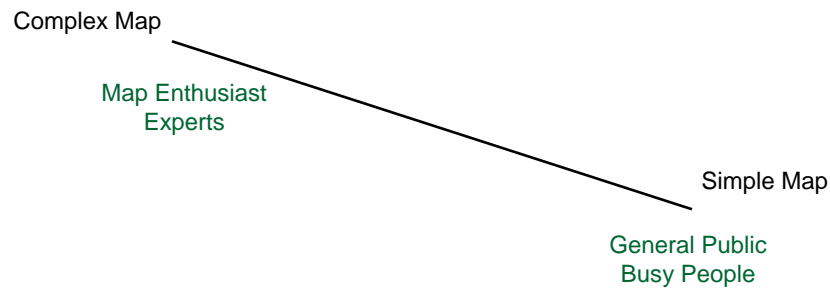


Two Simple Questions

- Who will read the map?
- How will the map be presented?

Who will read the map?

- The audience dictates the content
 - Are they well-informed of the subject?



Example: Bridge Restrictions



How will the map be presented?³

- The symbols and text need to match the map size.
 - Handheld Maps
 - Tiny Maps
 - Large-Format Maps
-

Handheld Maps

- Allows the most freedom in design
 - Reading distance 24 inches

 - Symbols and Text
 - Complex/Detailed Symbols
 - Small Fonts
-

Complex Symbols

●	Hydrant	🚓	Police Station	🔥	Fire District Boundary
🚒	FDC	👮	Sheriff Station	🌊	Waterbody
◇	Detail Map	🎓	School	🌊	River
Ⓚ	Knox Box	🏥	Hospital	🌊	Named Stream
🔑	Gate - Unlocked	🚁	Helicopter Landing Site	🌿	Marsh
🔒	Gate - Locked	✈️	Airport	🏠	Building
🚒	Fire Station	🏖️	Beach	⛳	Golf Course
🚒	Fire Station - CDF	⚔️	Summit	🌳	Park

Example: Handheld Maps



Tiny Maps

- Show only necessary information
- Varies greatly over different media

- Symbols and Text
 - Keep Symbols Simple
 - Primary Feature can potentially use complex symbol
 - Limit text

Example: Tiny Maps



Large-Format Maps

- Reading distance can vary. Typically should be read/understood from 5-30 feet away
- Symbols and Text
 - Large Symbols
 - Large Fonts

Example: Large-Format Maps



Map Review

- Self Review
 - How does the map look?
 - Is the point of the map made?
 - Are the required elements there?
 - Peer Review
 - Most important step of the map making process.
 - Two elements are necessary for peer review
 - Honest critique
 - Thick skin
-

In Summary

- A map is a form of communication
 - A map has a purpose – typically not more than one.
 - Questions to ask
 - Who will read the map?
 - How will the map be presented?
 - Map Review
-

Resources ~ Books

- *Elements of Cartography, Fifth Edition.*
Robinson, Morrison, Muehrcke, Kimerling and Guptill. 1995. New York, NY: John Wiley & Sons, Inc.
 - *Cartography: Thematic Map Design, Fifth Edition.* Dent, Borden D. 1999. Boston, MA: WCB-McGraw Hill
 - *Designing Better Maps.* Brewer, Cynthia A. 2005. Redlands, CA: ESRI Press
 - *Designing Maps: A Sourcebook for GIS Users.* Brewer, Cynthia A. 2008. Redlands, CA: ESRI Press
-

Resources ~ Websites

- *ESRI Mapping Center*
<http://mappingcenter.esri.com>
 - *ESRI Training and Education*
<http://training.esri.com>
 - *CartoTalk*
<http://www.cartotalk.com>
-

Acknowledgements

- ¹ *The ESRI Guide to GIS Analysis: Volume 1*. Mitchell, Andy. 1999. Redlands, CA: ESRI Press.
 - ² *Cartography: Thematic Map Design, Fifth Edition*. Dent, Borden D. 1999. Boston, MA: WCB-McGraw Hill
 - ³ *“Making Maps That Communicate”*. Frye, Charlie (2001). ArcUser. October-December pp. 38-43.
-