USING VOLUNTEERED GEOGRAPHIC INFORMATION TO VISUALIZE COMMUNITY, VALUES, AND ECOSYSTEM SERVICES FOR COMMUNITY REVITALIZATION IN DULUTH, MINNESOTA

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Outline

- Introduction and R2R2R
- City of Duluth revitalization and local context
- Volunteered Geographic Information
- St. Louis River Area of Concern and neighborhood
- Health Impact Assessments

Place-based R2R2R inquiry

- Remediation to Restoration to Revitalization
  - How does a community express the value of ecosystem services?
  - How can knowing what it values lead a community to R2R2R action?
- How can we get to community ecosystem services values?

http://philipschwarzphotography.files.wordpress.com/2015/08/pier-b-resort-15-7-_0182.gif

Study site: St. Louis River Corridor

R2R2R Goals in the River Corridor:
- Remediation and restoration of the environment
- Community revitalization
- Enhance the quality of life
- Attract new homeowners
- Establish new visitor destination
- Stimulate appropriate development

We lack the means of:
- Community ecosystem service and input into R2R2R
- Measuring R2R2R outcomes in terms of betterment of human well-being

The Problem

- Contentious trail project in the City of Duluth

- Very vocal and knowledgeable neighbors

- Felt the City was not hearing their concerns

Key question

What do you want the City to know?
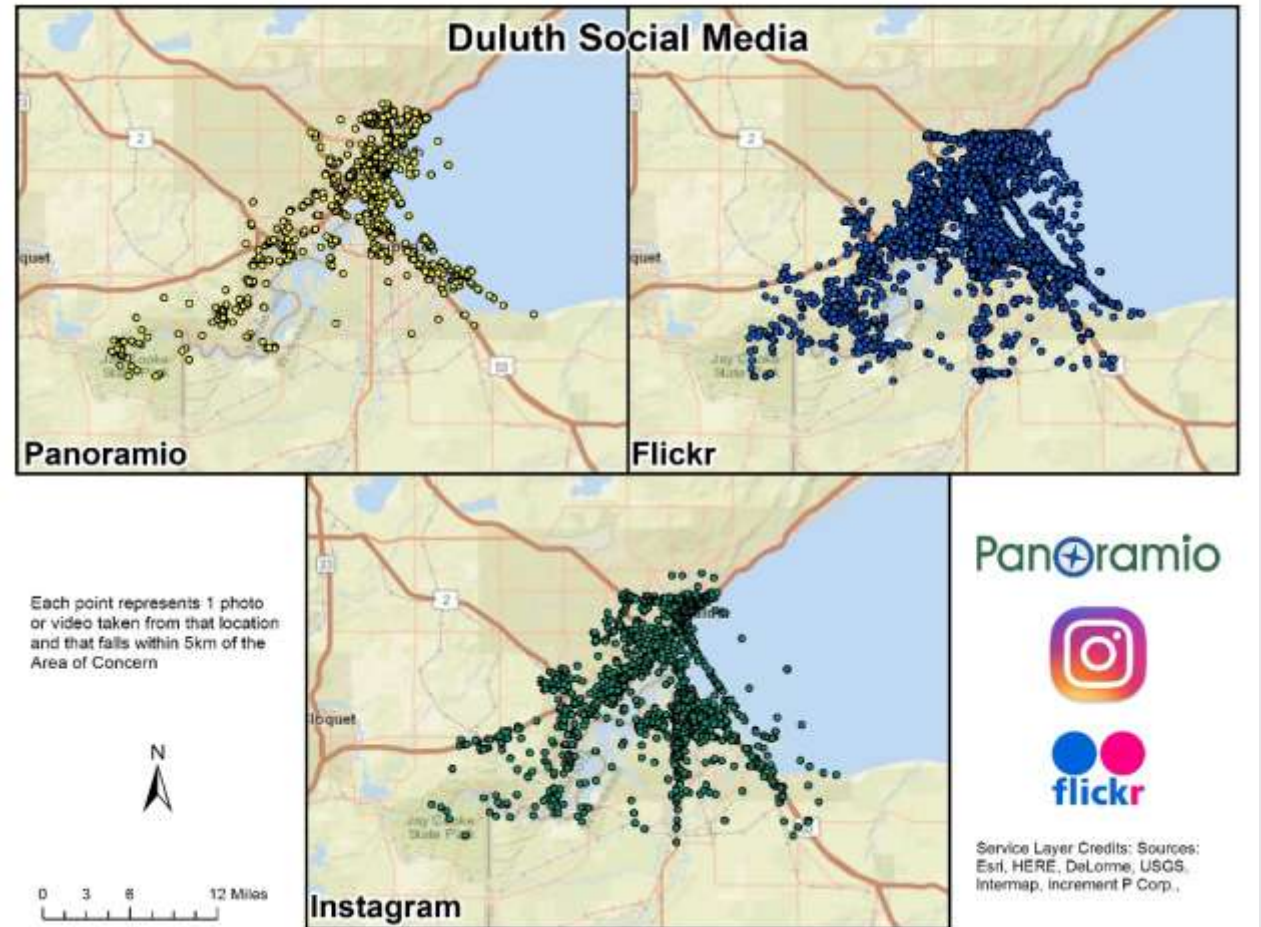
Volunteered Geographic Information

EPA

Crowdsourcing & Citizen Science

- Structured
- Often an app or website
- Involves training of the volunteers and execution of a protocol
- Allows for the collection of observations and opinions
- Can be more or less systematic

Social media

- Identify cultural, recreational, and aesthetic values through social media analysis (Allan et al., 2015; Keeler et al., 2015; Figueroa-Alfaro and Tang, 2016)
- Panaramio and/or Flickr
- Regional and state-wide studies

Social media analysis

- Panaramio (2400)
  - Landscape
  - 9 years of data
- Flickr (31,000)
  - Landscape, but also people
  - 13 years of data
- Instagram (18,000)
  - More spontaneous
  - 5.5 years of data

Duluth Social Media

Panoramio

Flickr

Each point represents 1 photo or video taken from that location and that falls within 5km of the Area of Concern

N

0   3   6   12 Miles

Instagram

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp.,

What can you tell about a trail or amenity from photos?

WESTERN PORT AREA NEIGHBORHOOD PLAN
STUDY AREA CONTEXT MAP

- Panaramio: 27 photos
- Flickr: 433 photos
- Instagram: 446 photos

The biggest cluster?

Lake Superior Zoo

Density map in WPAN
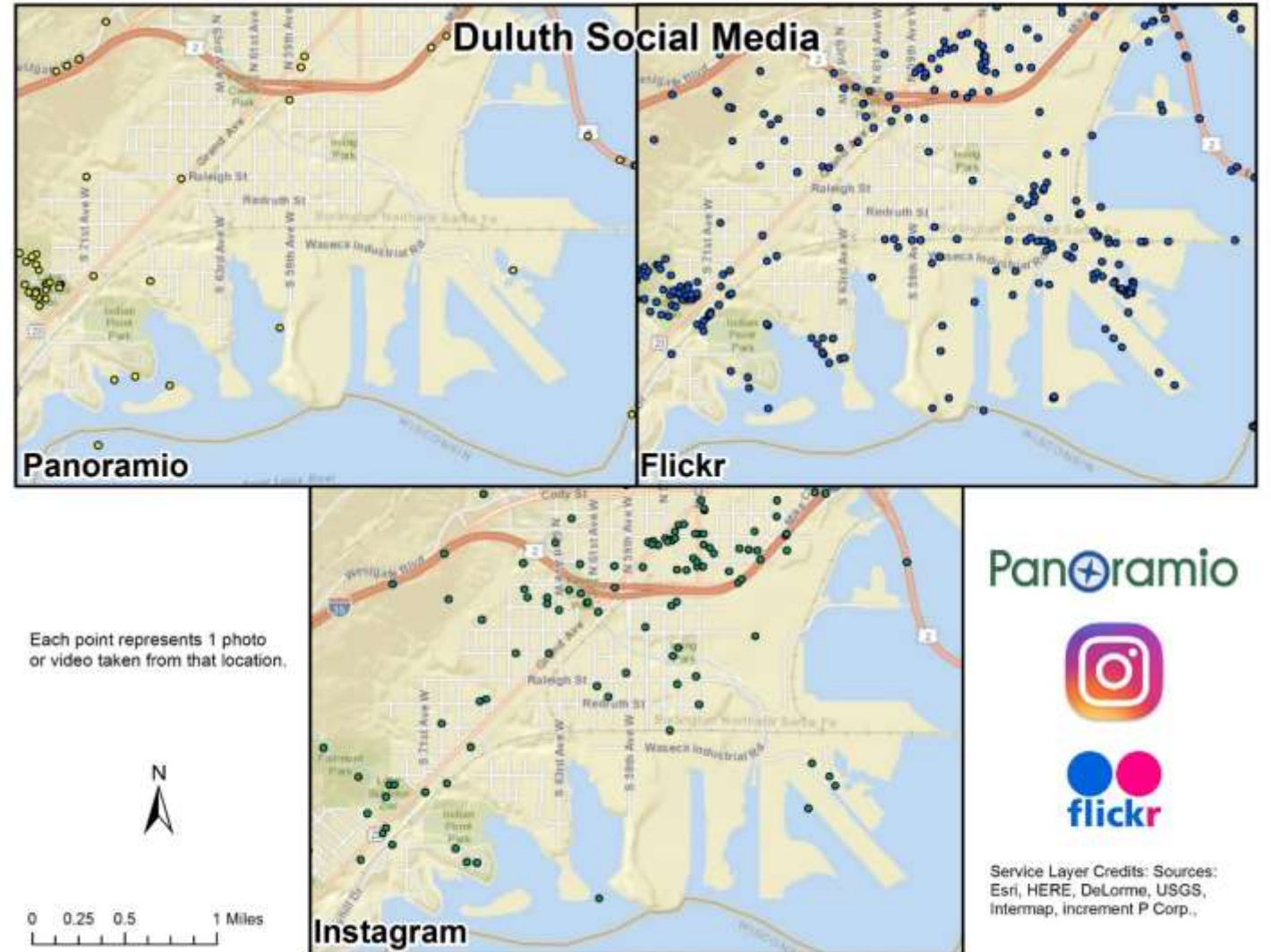
Hotspots

- Zoo
- Keene Creek Dog Park
- Grassy Point
- Western Waterfront Trail
- Superior Hiking Trail
- Burlington Northern Tracks

EPA
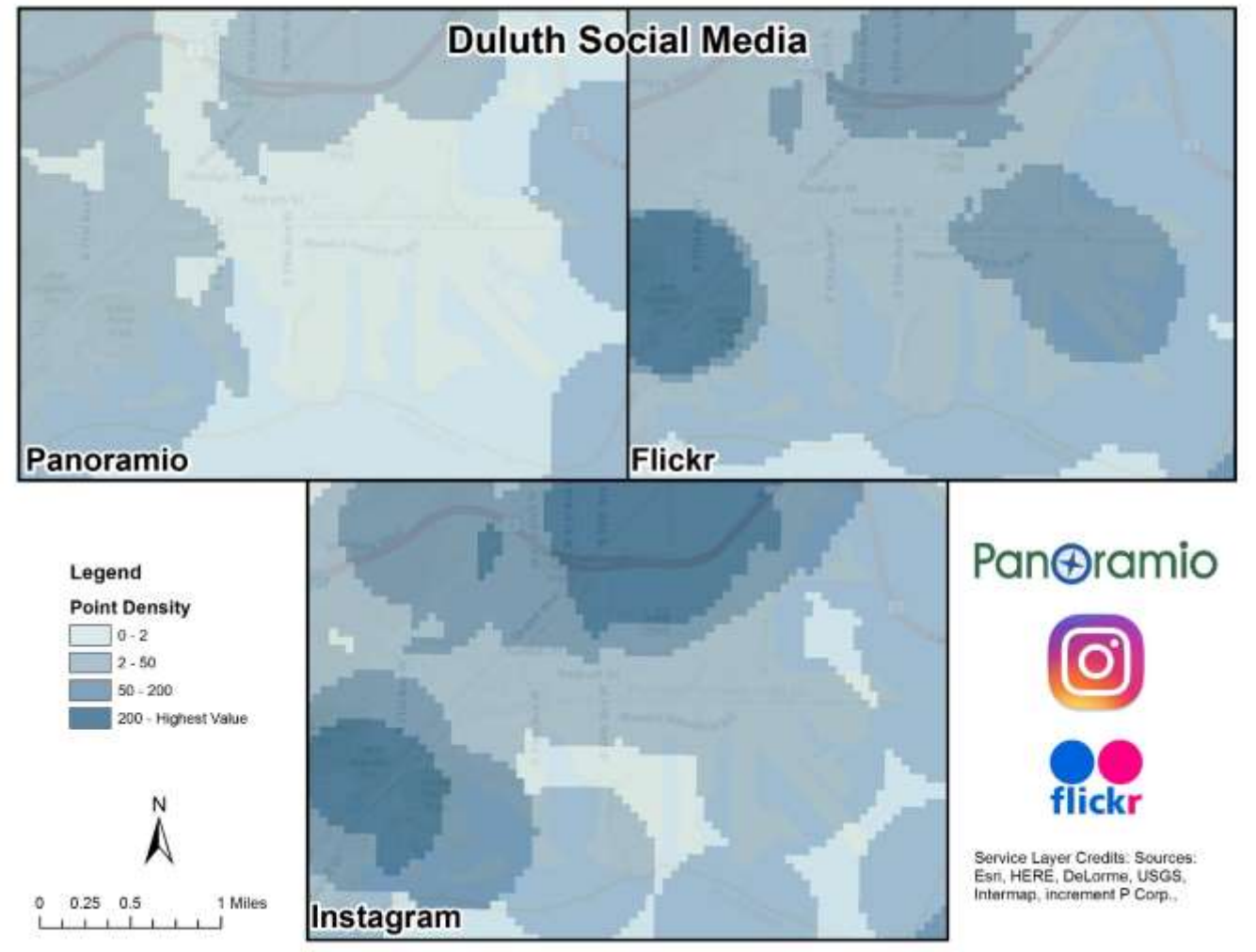
- Almost all of the photos are taken outside, but not all in nature

- Landscape features are important part of photo even if not the subject

Analysis Questions

- Outside/in nature?

- If so, what kind?

- What seeing/doing?

- Is landscape part of photo?

- What parts of landscape/nature?

Decision application

- Health Impact Assessment
  - Ecosystem services to inform decision
- Grassy Point-Kingsbury Bay
  - Habitat restoration and park development
- Diverse participation
  - Federal and state agencies
  - Local government
  - Nonprofit organizations
  - Community groups
- Additional community value data

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