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Ecosystem Services and Greenspace

Land Use Advisory Committee
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Today’s overview

- What are ecosystem services and what is greenspace?
- How has the region changed in the past?
- How does greenspace intersect with equity?
- How might greenspace inform a more sustainable future?
- Discussion

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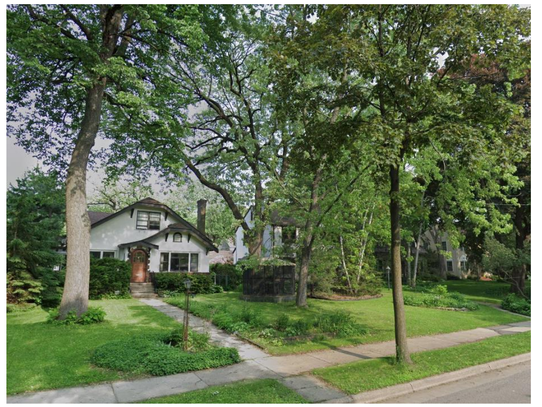
Greenspace provides critical ecosystem services

- “Greenspace” = plant-dominated areas
  - Clean air
  - Clean water
  - Biodiversity habitat



- **What are the environmental challenges or opportunities linked to greenspace in your communities?**

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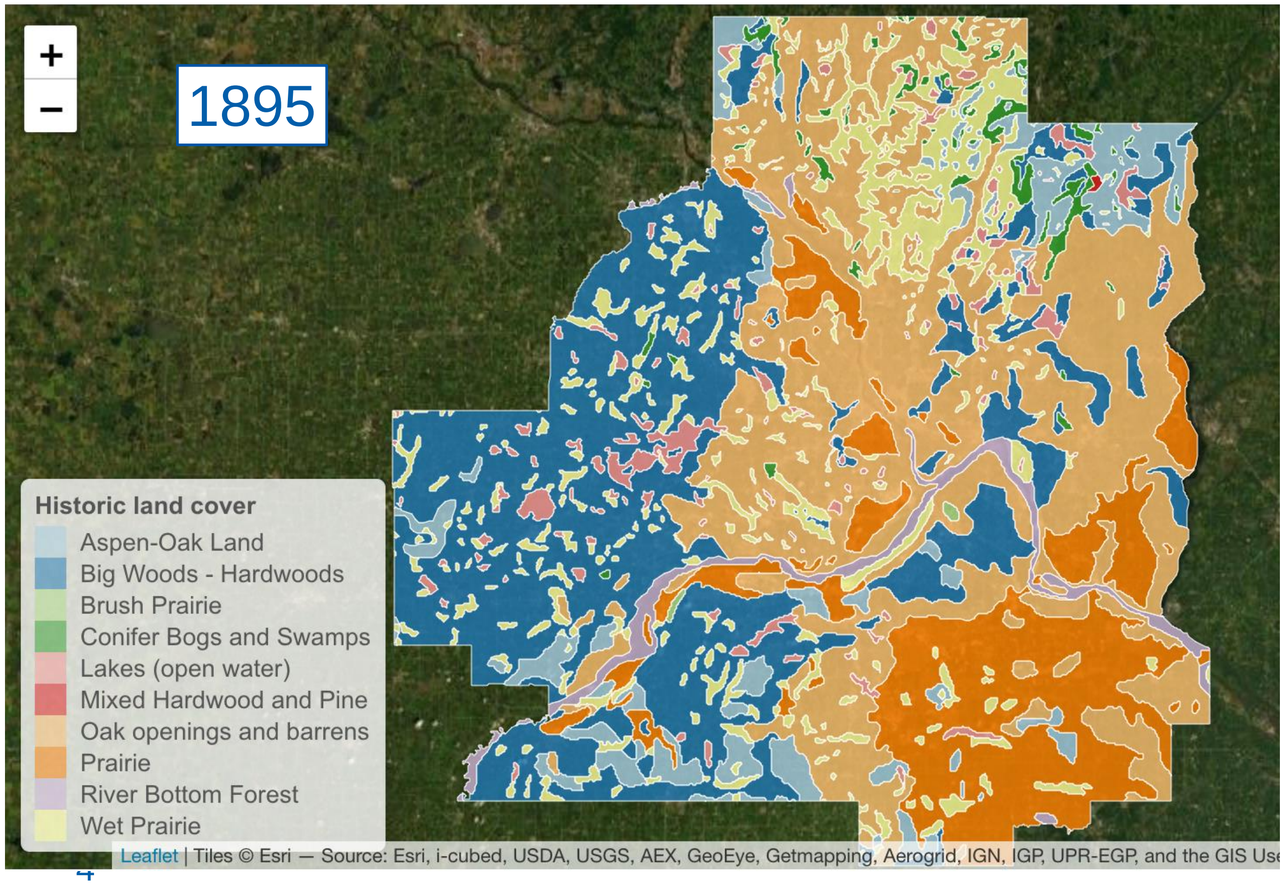
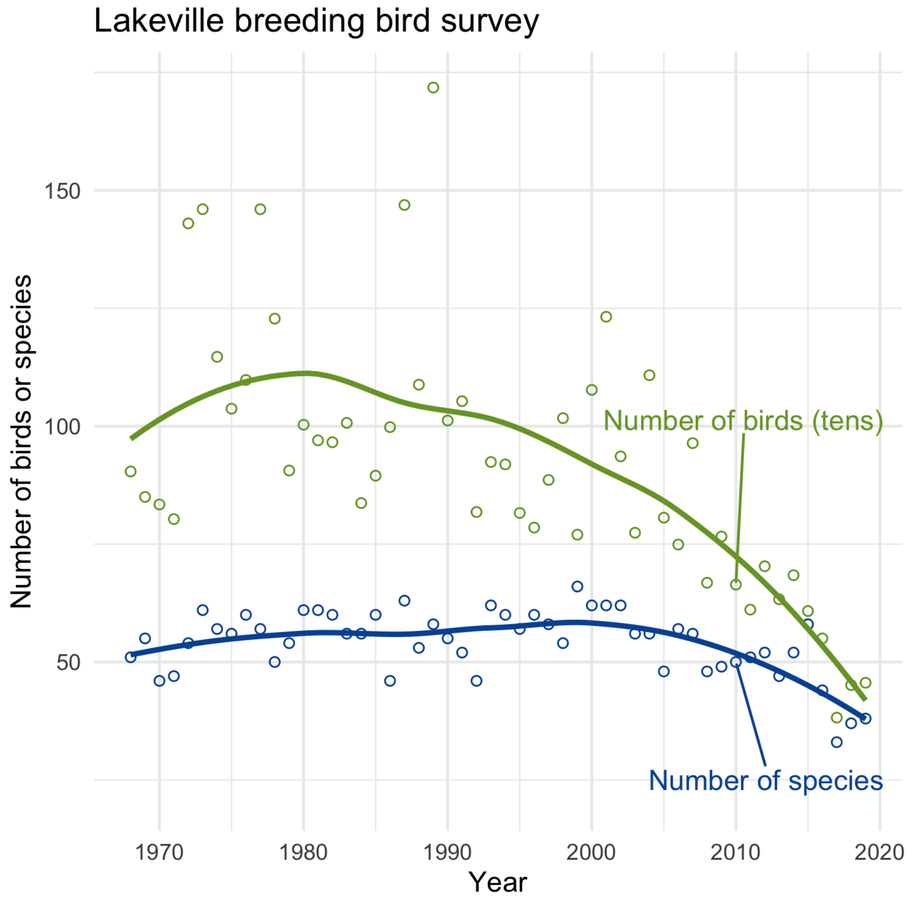
Profound land use and ecosystem changes over 100 years

- Complete vegetation turnover



https://gisdata.mn.gov/dataset/biota-marschner-presettle-veg

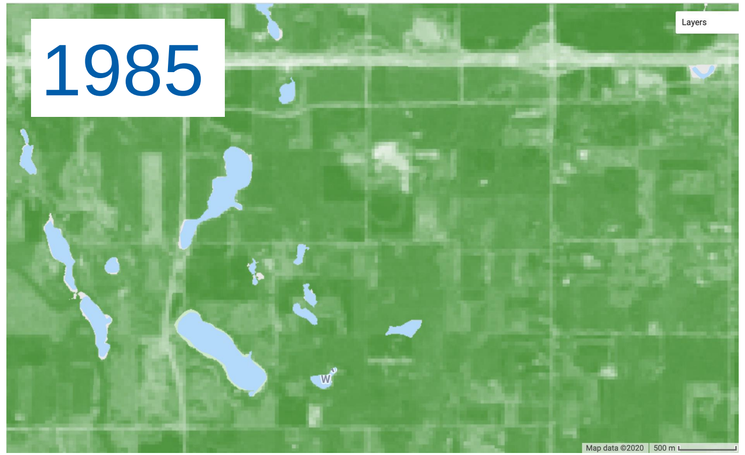
- Long-term declines in ecological function regionally and globally

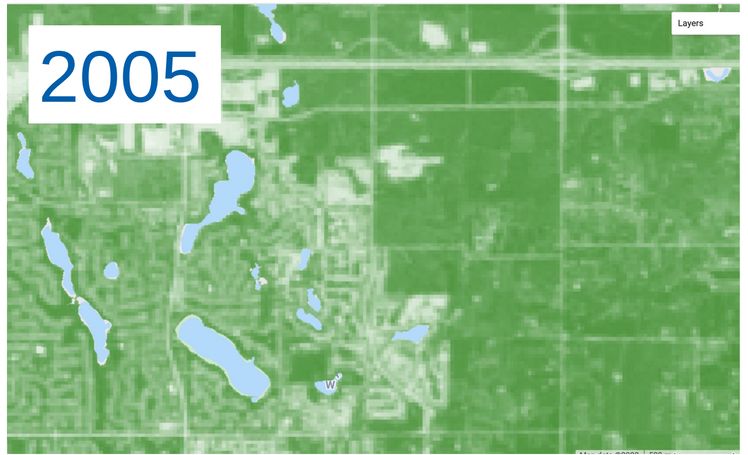


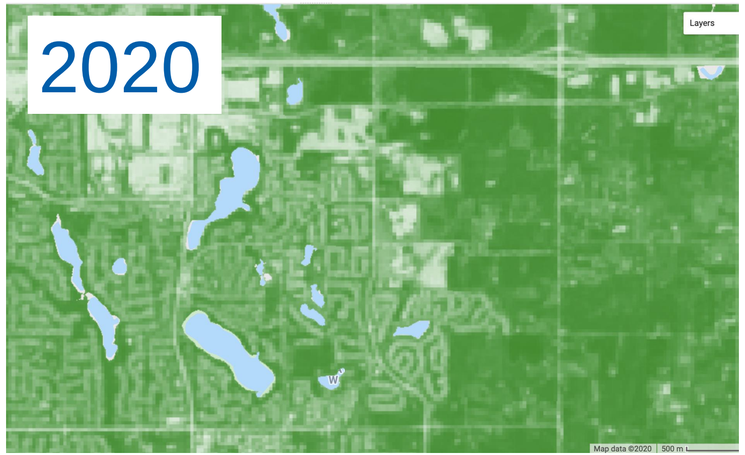
https://www.pwrc.usgs.gov/bbs/

Using satellite imagery to measure 36 years of greenspace change

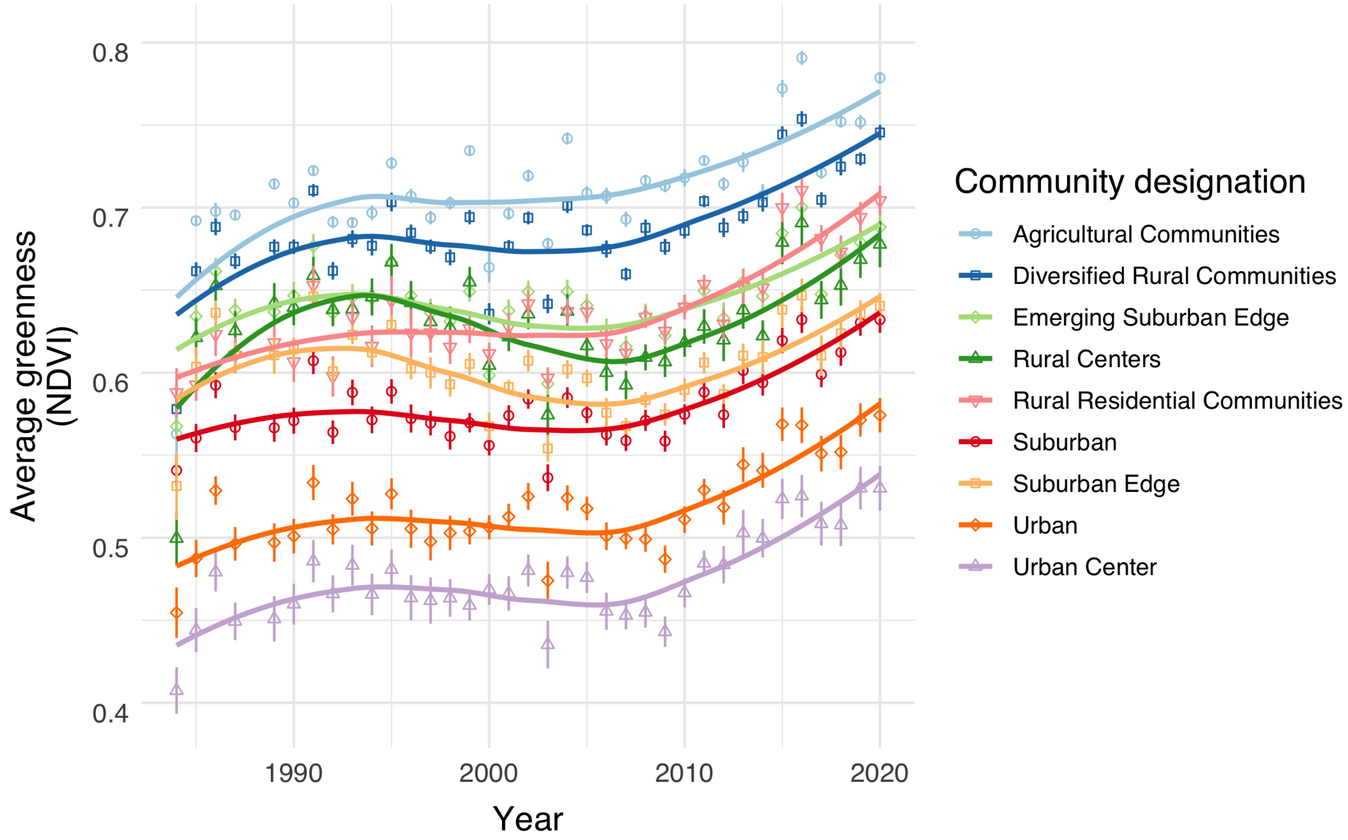
- 30 meter^2 pixel size since 1984 (10 meter^2 since 2017)
- Normalized Difference Vegetation Index (NDVI) of “greenness” is scientifically proven
- Real time measurements are possible
- Vegetation quantity ≠ vegetation quality
- **How might greenspace measurements help inform and monitor land use decisions in your communities?**







Regionally, land use change does not necessarily lead to lost greenspace *quantity*



- 1984 is not a “gold standard” for greenspace
- Longer summers and maturing vegetation linked to similar trends in other temperate regions
- Improvements in agricultural technologies increase crop yields
- Large variation in greenness across the metro

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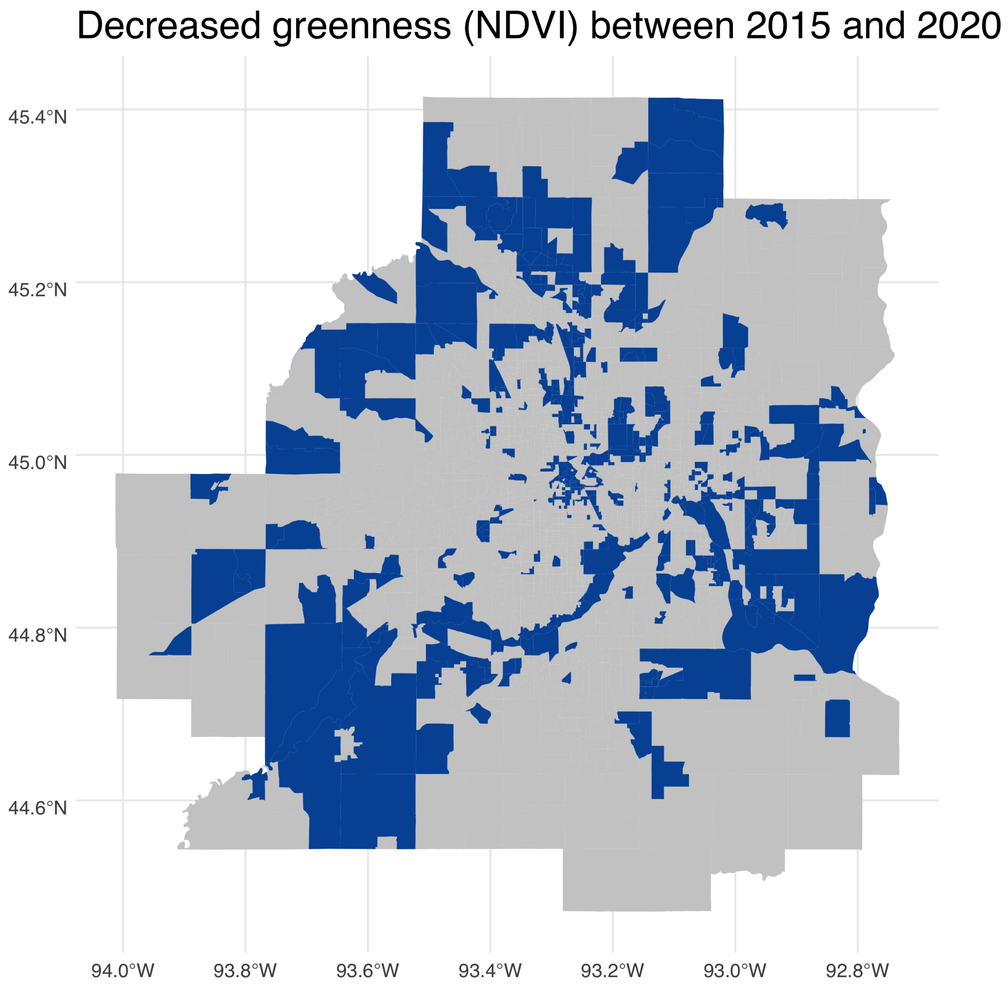
Spatially explicit patterns in greenspace change



- Any geographic area can be analyzed
- ~500 block groups have seen greenness declines since 2015

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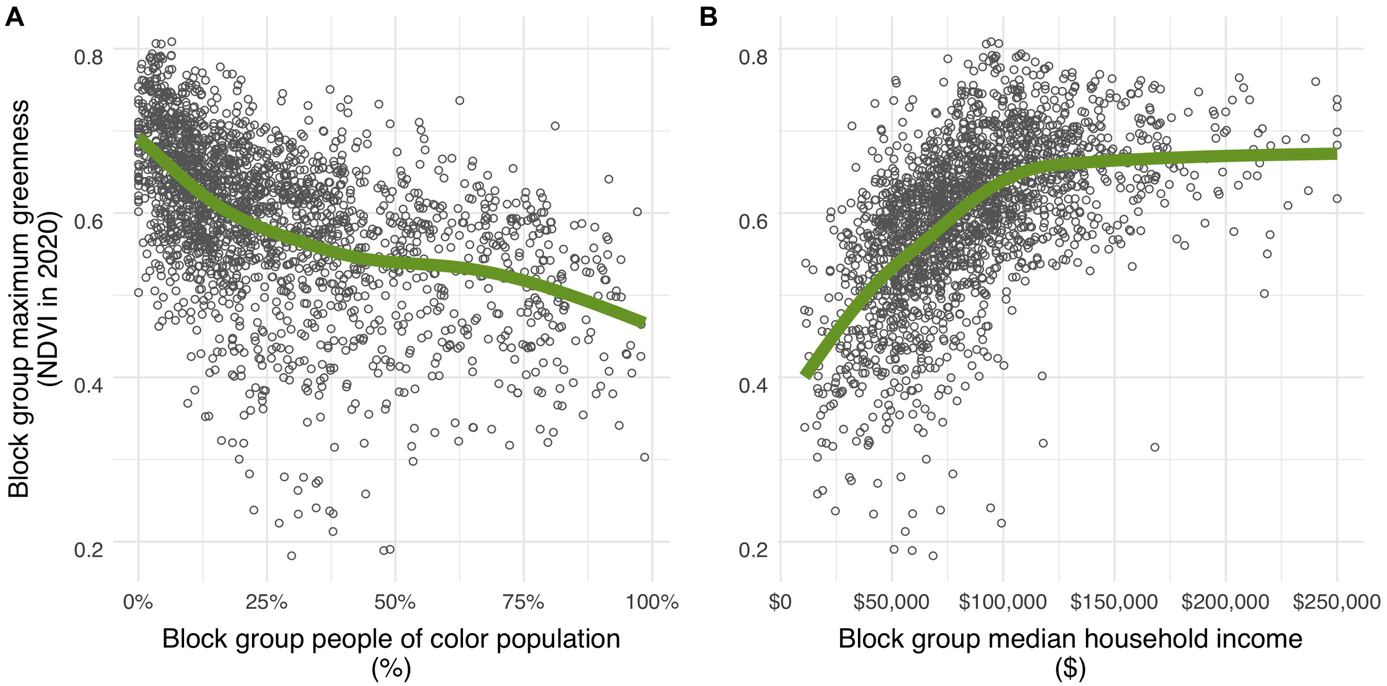
Racial and economic disparities in greenspace



- Block groups have less greenspace when:
  - More than 25% people of color
  - Median household incomes are below $100,000
- **What opportunities are being considered to reduce inequitable distribution of greenspace in your communities?**

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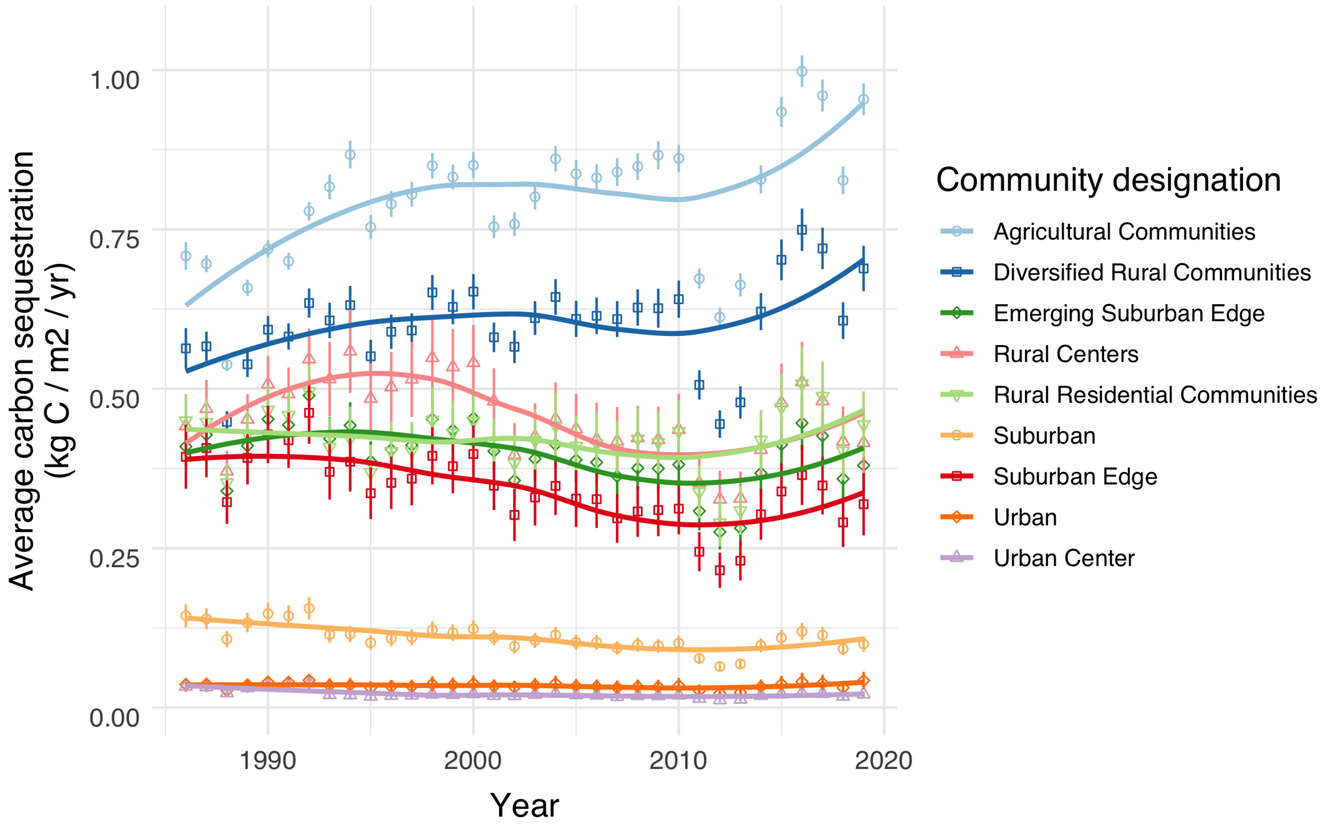
Unique opportunities with agricultural land



- Agricultural areas have the largest existing carbon pools ('greenness') *and* the highest carbon sequestration rates
- Evolving agricultural technologies and markets could contribute to natural climate solutions
- Managing existing carbon stocks and considering future carbon sequestration rates could be critical to reaching climate goals

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What questions are important to you?

- What are the environmental challenges or opportunities linked to greenspace?
  - clean air, clean water, biodiversity habitat
- How might greenspace measurements help inform and monitor land use decisions?
  - real time and spatially explicit
- What opportunities are being considered to reduce inequitable distribution of greenspace?
  - economic and racial patterns

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