How Community Organizations affect lake outcomes

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WHAT ARE WE INTERESTED IN?

- What role do lake associations play in determining lake water quality?

- Do different governance structures affect water quality outcomes?

- Where are lake associations most likely to arise?

WHY IS THIS IMPORTANT?

- Should resources be used to encourage private initiatives at providing public goods?

- How to optimize extension and outreach efforts to associations?

CONCEPTUAL FRAMING

- Free rider problem with regards to lake quality presents challenges.

- Potential solutions? Or ways to address this issue?

- Associations - private solution

- Districts – public finance solution

TESTABLE HYPOTHESIS:

- All else equal, we anticipate that lake quality should be better at lakes with cooperative institutions.

- Lake districts should perform better than lake associations, but together should operate better than either alone.

- What is the role of the scale of operations?

OVERVIEW OF AVAILABLE DATA

- Lake association/district database

- WDNR's Surface Water Integrated Monitoring System (SWIMS)

- Fisheries Management Database (FMDB)

- Grants data

- US Census data

POTENTIAL MODEL DESIGN

- Model to assess if physical lake factors drive the formation of lakes

$$y_i = \begin{cases} 1 & if\ lake\ i\ has\ association \\ 0 & otherwise \end{cases}$$

$$y_i = \alpha \cdot size_i + \beta \cdot other\ physical\ attributes_i$$

- Goal: to identify whether the existence of lake associations is driven by physical characteristics of the lakes.

POTENTIAL MODEL DESIGN, CONTINUED…

- Model to assess if physical lake factors drive the formation of lakes

$$q_{it} = water\ clarity\ of\ lake\ i\ at\ time\ t$$

$$y_{it} = \begin{cases} 1 & if\ lake\ i\ has\ association\ at\ time\ t \\ 0 & otherwise \end{cases}$$

$$q_{it} = \delta \cdot y_{it} + \theta \cdot physical\ attributes_{it}$$

- Goal: to determine if the presence of a lake association improves water quality.

CHALLENGES

- Primary problem will be distilling the pure effect of the lake associations.

  - Important to understand the process by which these institutions arose

  - Appreciate that we will not fully capture all of the variables that inform the existence of a lake or the water quality.

WHERE ARE WE NOW?

- In the process of collecting data

- Compiling information on lake associations and districts around the state.

- At this point we do not have any results to show you, but would be interested in hearing any thoughts or ideas you may have

SUMMARY

- To assist in determining the future role for the UW Extension outreach efforts in facilitating the management of Wisconsin lakes.

- The presented analysis will hopefully bring meaningful information to this decision on whether to encourage private initiatives (lake associations), public investment (lake districts), or not to devote any resources.

REFERENCES

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