

# IMPROVING UNDERSTANDING OF IMPACTS OF VOLUNTEER WATER MONITORING PROGRAMS ON NATURAL RESOURCE POLICY AND MANAGEMENT

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Water Action Volunteers Stream Monitoring Program

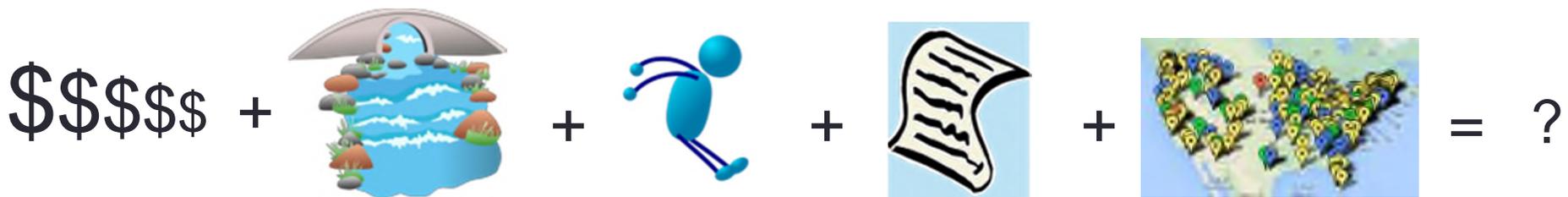
UW-Extension and WI Department of Natural Resources



# Our reality

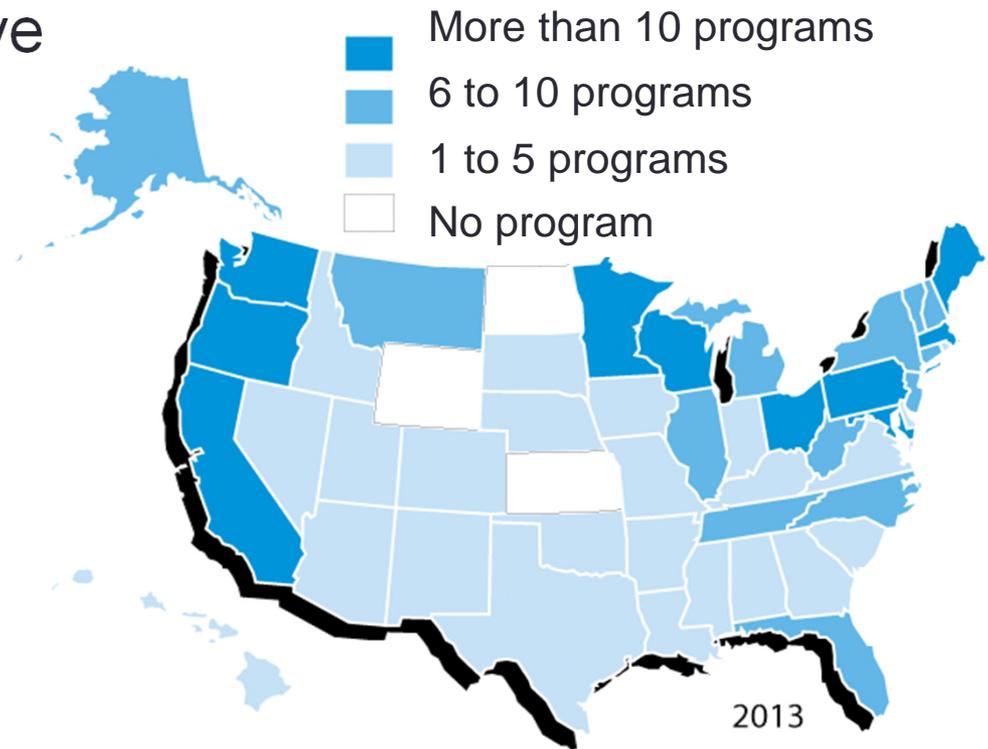
We have:

- Shrinking public natural resource management budgets +
- Continued water quality and quantity challenges +
- Citizens who care a lot and are ready to jump in to help +
- Policies that allow for & encourage citizen participation +
- Volunteer monitoring programs =
- Effective contributions to natural resource management and policy?



# Are we succeeding?

- What outcomes for natural resource & policy mgt have been reached by VM?
- What are program characteristics?
- Survey of 345 volunteer water monitoring program coordinators
- 86% responded

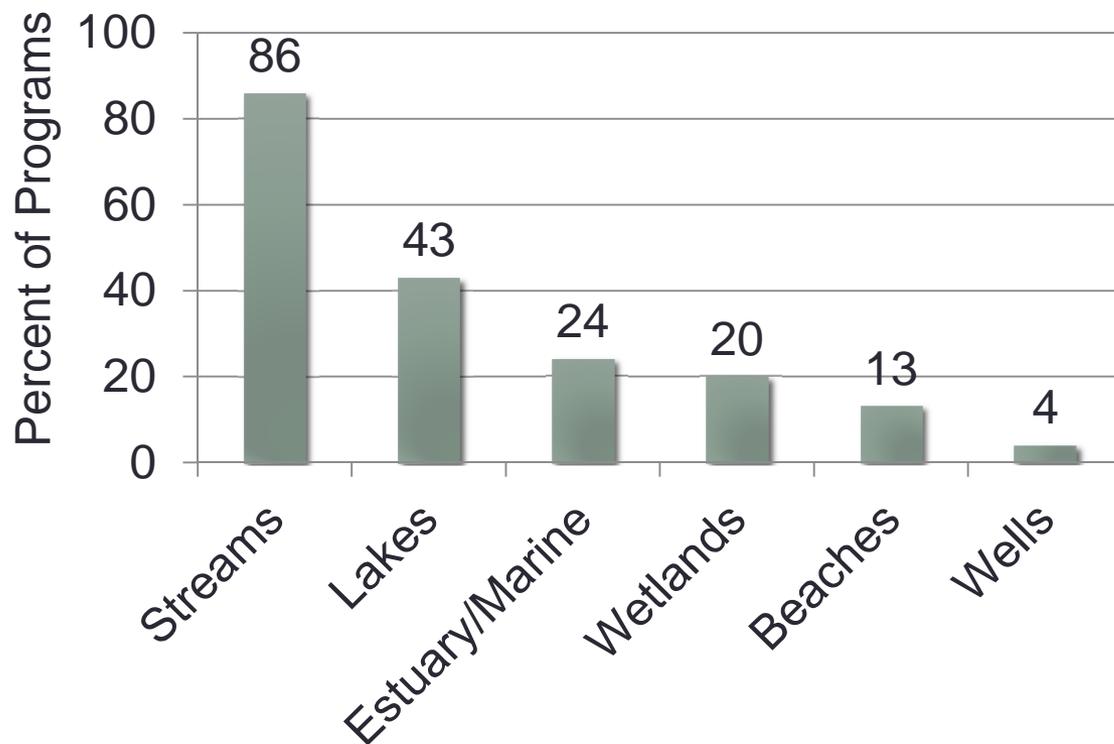


# PROGRAM CHARACTERISTICS



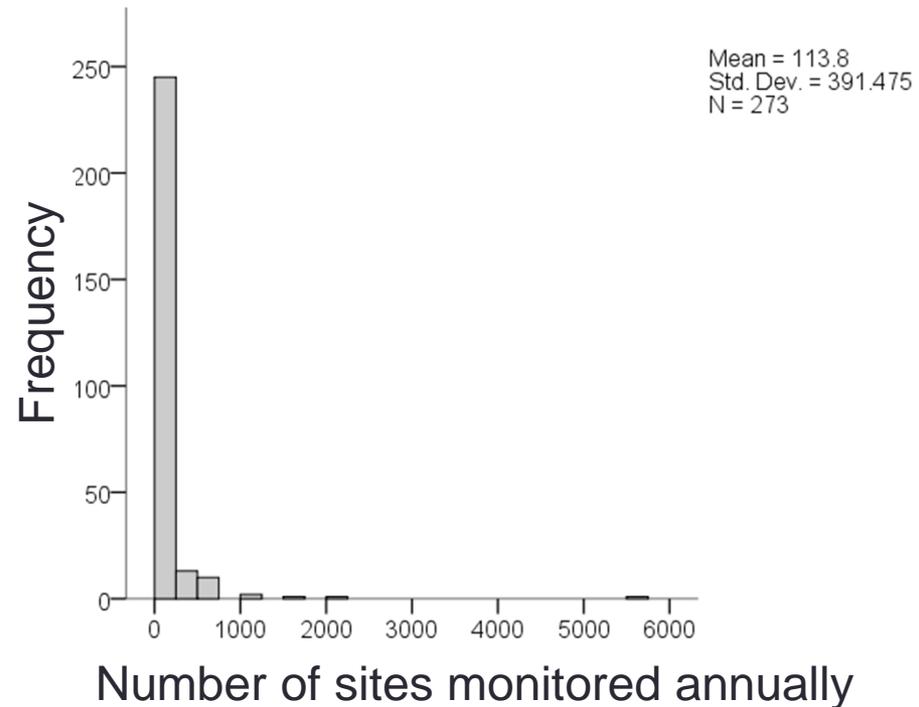
# Type of waterbody monitored

Most monitor rivers/streams and lakes



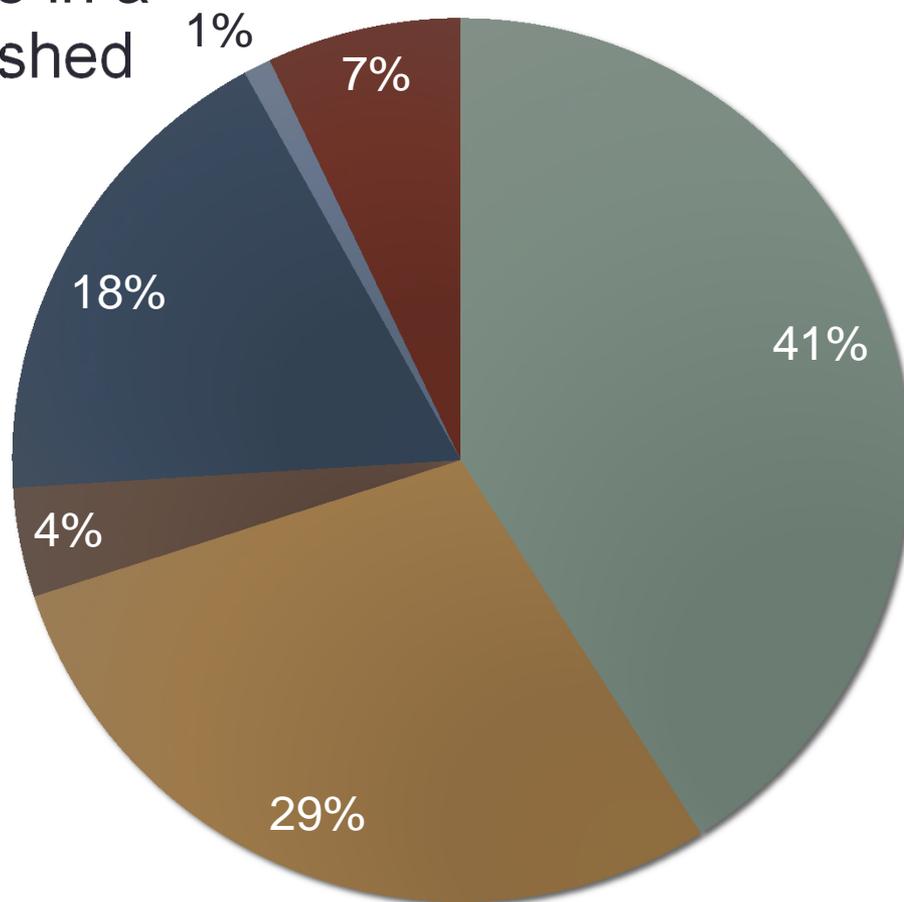
# Program size

- Support >1300 sub-programs
- Huge range of sizes
  - 1-5500 sites (114 sites on average)
  - 2-10,000 volunteers/year (377 on average)
  - 1-10 full time paid staff (1 on average)



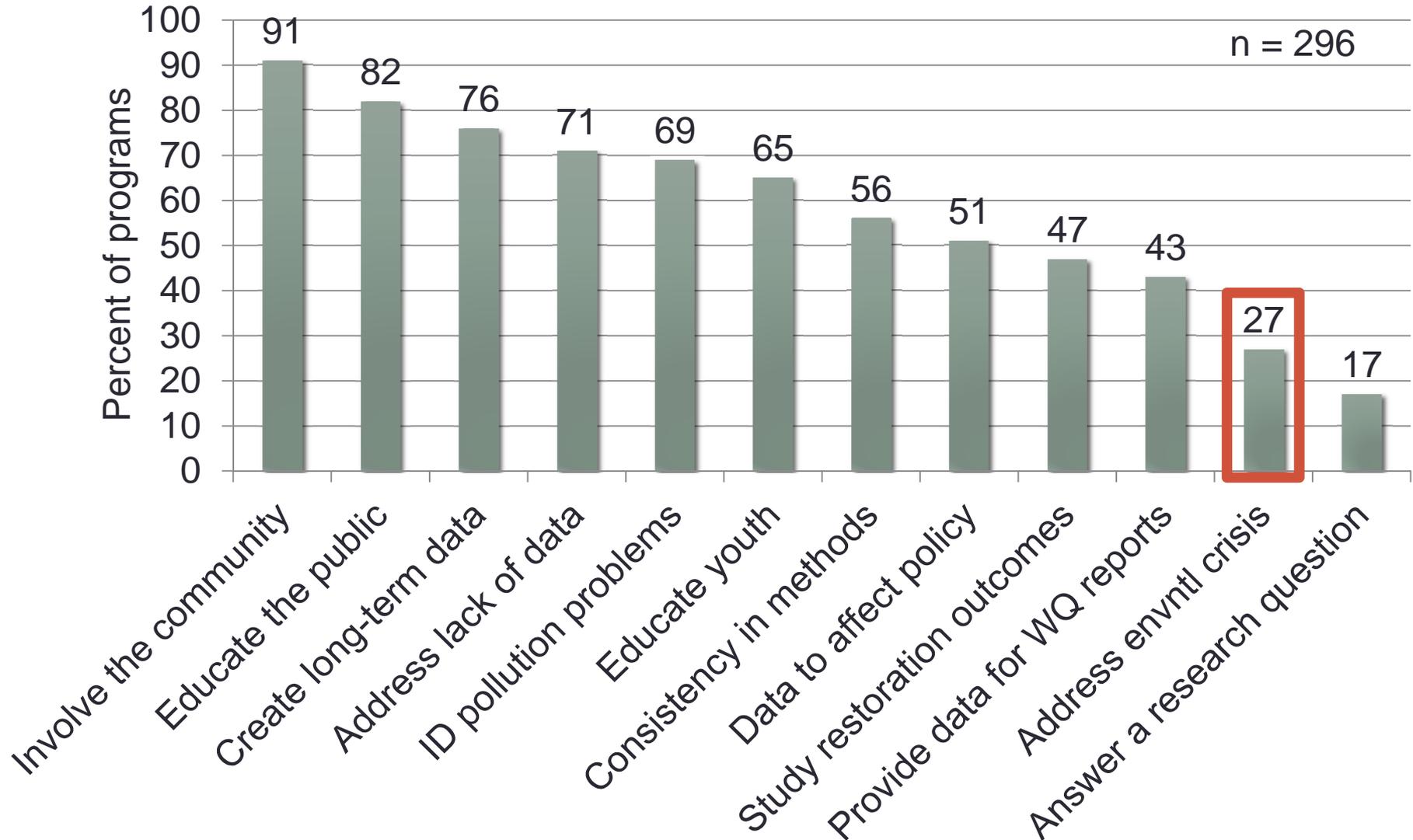
# Geographic scope

Most operate in a  
single watershed

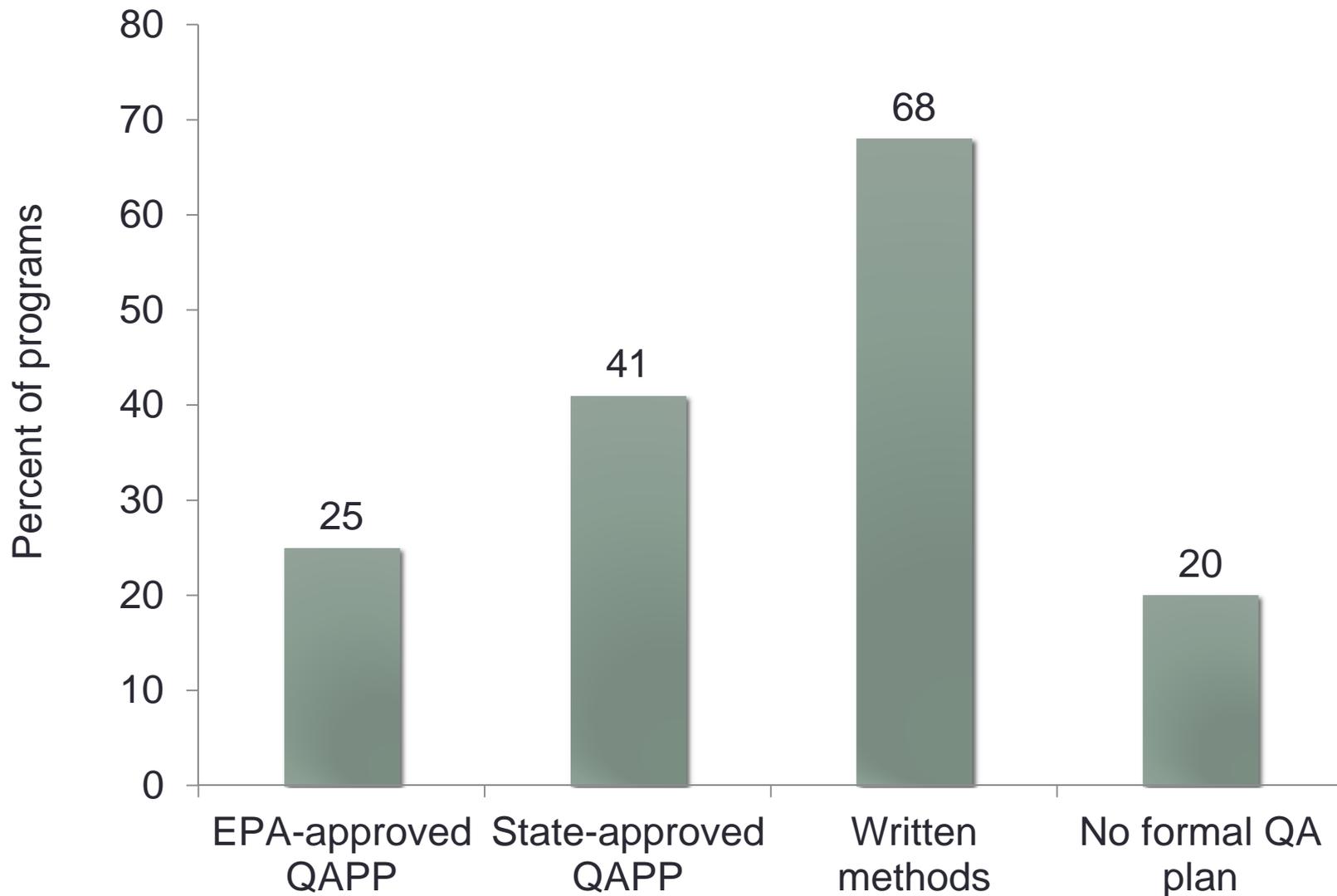


- Local waterbody or single watershed
- Multi-watershed
- Multi-state or Regional
- Statewide
- National
- Other

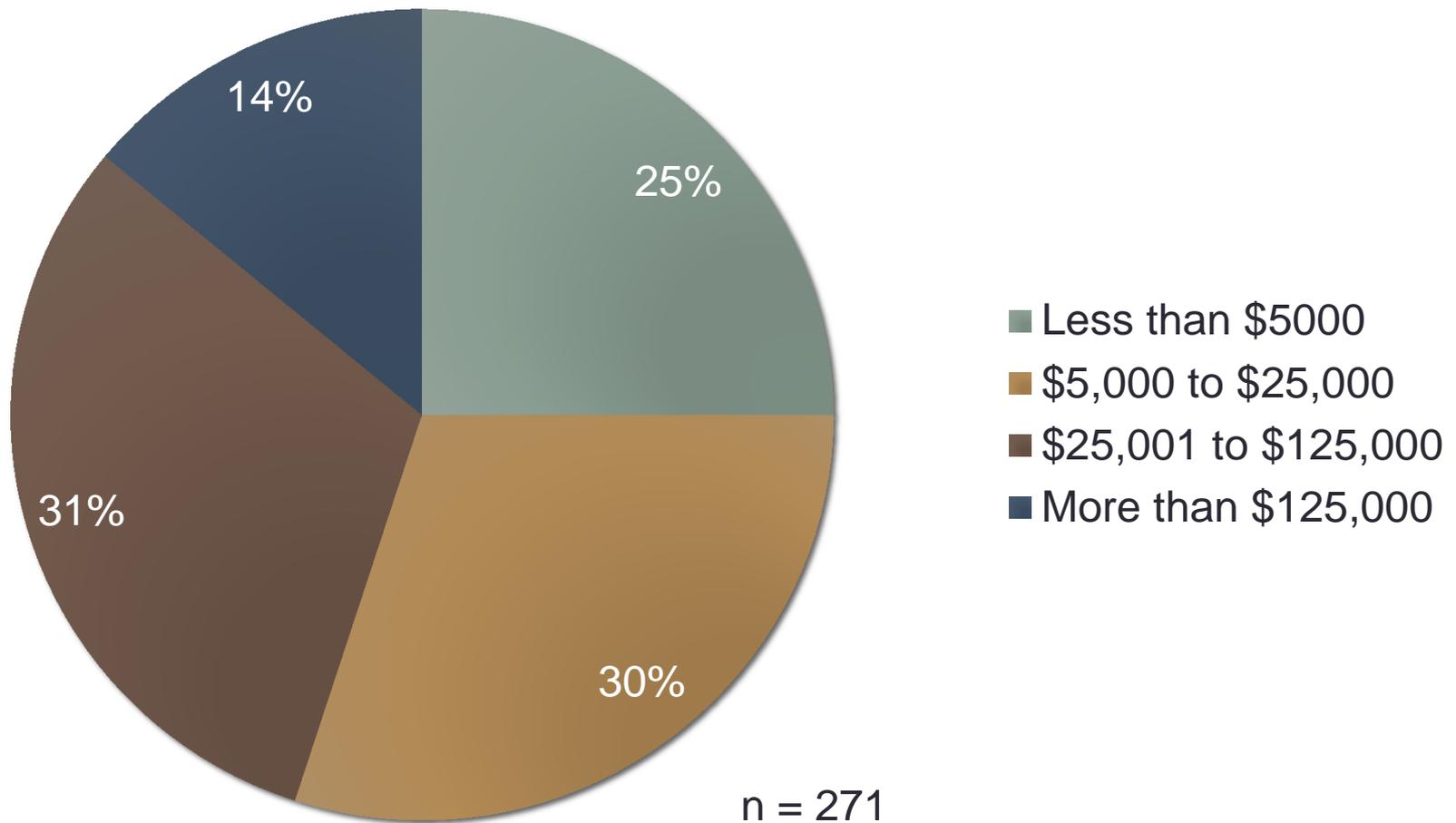
# Program Objectives



# Quality assurance



# Annual program budgets



# IMPACTS ON NATURAL RESOURCE MANAGEMENT AND POLICY



# Impacts on waterbody protection & restoration

- Had volunteer data been used to:
  - Obtain protected status for a waterbody
  - Justify altering land uses
  - Protect land from development
  - Obtain funding for restoration/protection



# Waterbody restoration & protection examples

- State protected waters status / US Wild and Scenic River status
- Urban/suburban:
  - Reconfigured parking lot and installed new rain garden
  - Stopped highway construction until silt fences installed
  - Located and eliminated illicit connections
  - Changed ball field land uses to reduce stream turbidity



# Waterbody restoration & protection examples

- **Agricultural:**
  - Fencing, buffer strips installed
  - Changes to industrial farming practices
- **Recreational/Commercial:**
  - Gear restrictions for fishing
  - Obtained funding for acid mine drainage remediation
  - Established oyster bed sanctuary
  - Removed culvert / installed bridge to increase tidal influence and salmonid spawning



# Impacts on natural resource policy & management decisions

- Have data been used to:
  - Identify where a standard was not met
  - Define/modify a standard
  - Close/open a beach or fishing area
  - Develop, change or enforce a regulation



# Natural resource management examples

- TMDLs developed
- Impaired waters listings/de-listings
- Ordinances developed to stop shoreline waterfowl feeding
- Slow or no wake zones developed to minimize spread of invasive species
- Mandatory pet waste clean up areas developed



# Natural resource management examples

- UV disinfection periods expanded at a wastewater treatment plant
- Dam owner permit altered to meet water and temperature requirements of fish
- Developers fined for sediment discharge violations



# Volunteer civic engagement impacts

- Reported if volunteers had
  - Served on a board
  - Testified before a legislative body
  - Written letters to support or refute a policy (with/without data)



# Volunteer civic engagement examples

- Have spoken to township, city, & county boards
- Sent data to city engineers and county supervisors for action
- Served on conservation commissions, town board, zoning boards, planning commissions, watershed councils & as county supervisors
- Written to state rep to support a bill
- Testified before Congress



# Organizational impacts

- Reported if organizations had:
  - Changed **how** assessed water quality
  - Changed **where** assessed water quality
  - Given citizens staff monitoring responsibilities

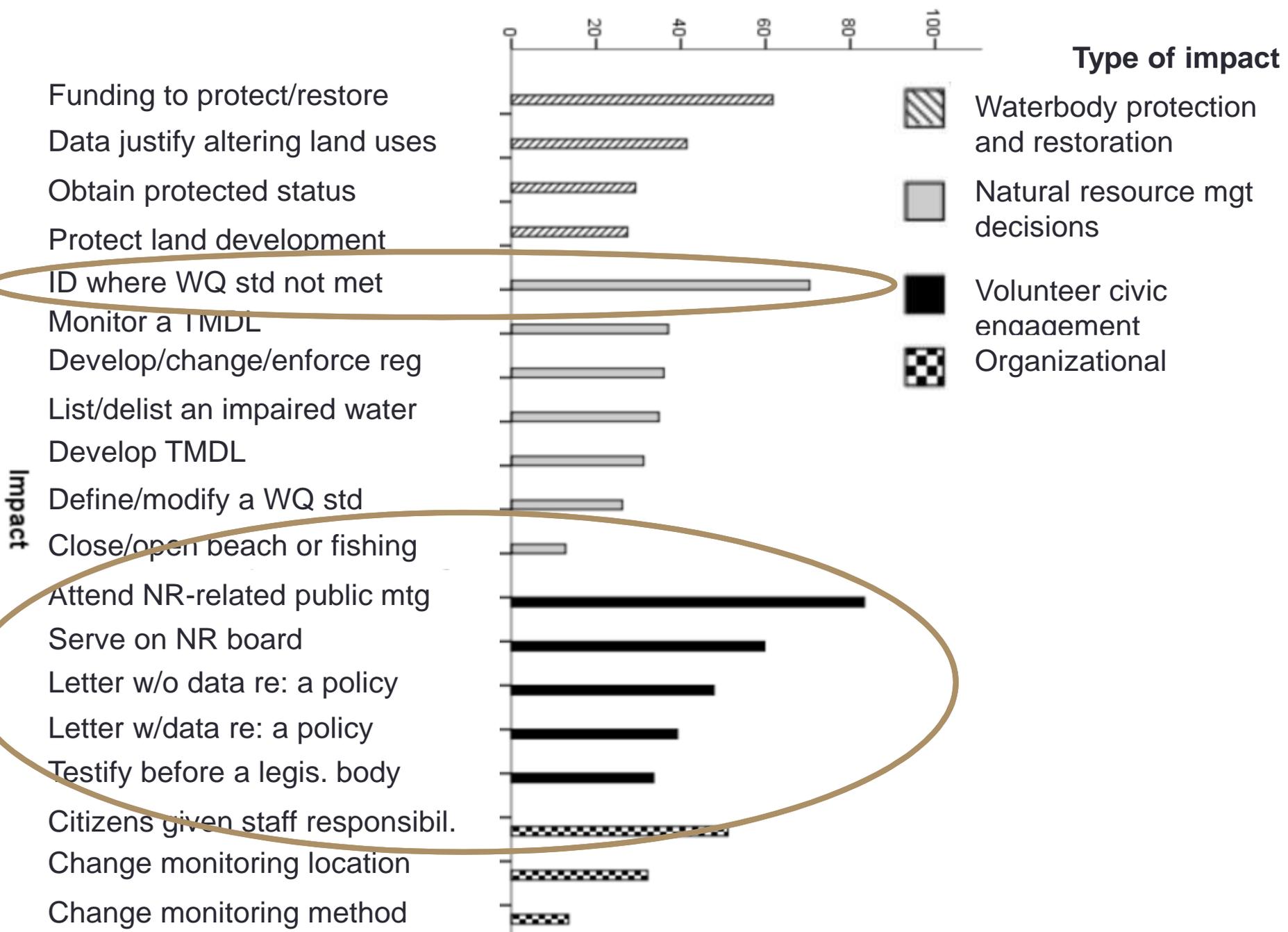


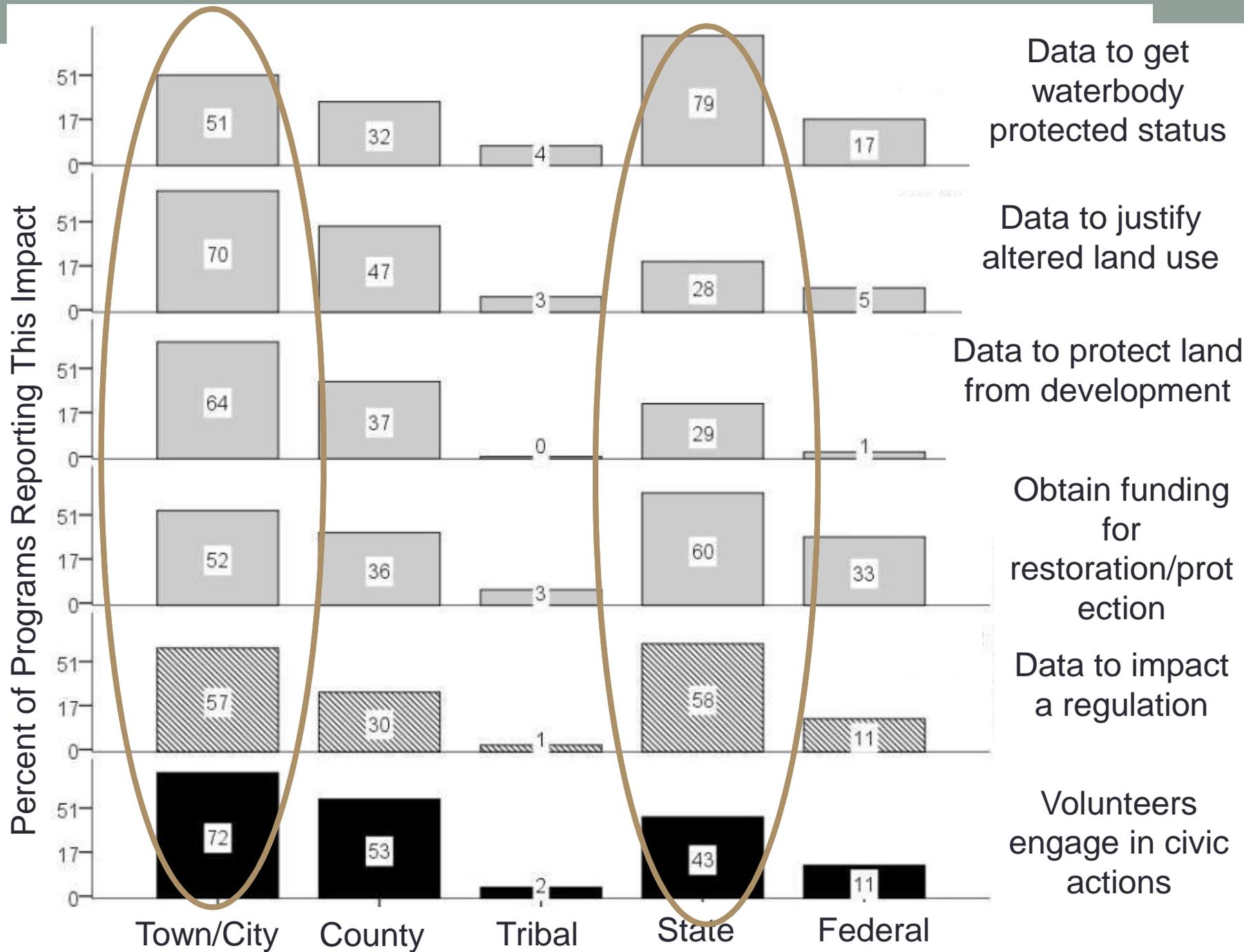
# Organizational impact examples

- State agencies:
  - Expanded monitoring to include pharmaceutical, personal care products, surfactants & optical brighteners
  - Switched from using alpha bottle to the integrated water samplers
  - Now determine where biomonitoring should occur based on vol. mon. results



# Percent of Programs



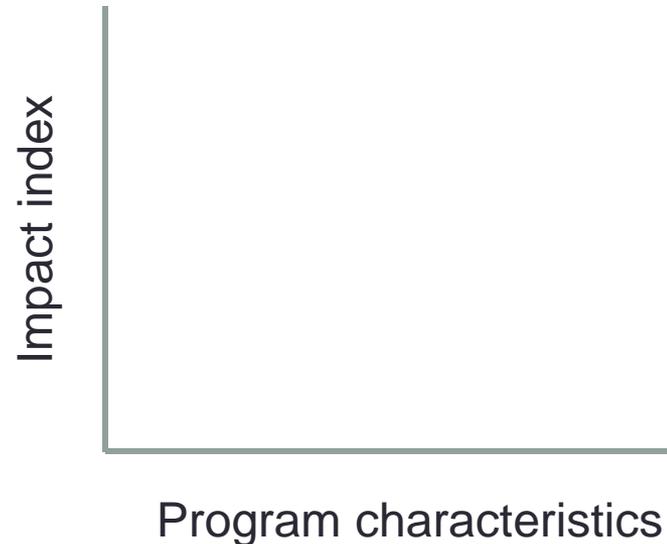


# Impact indices and multiple regression

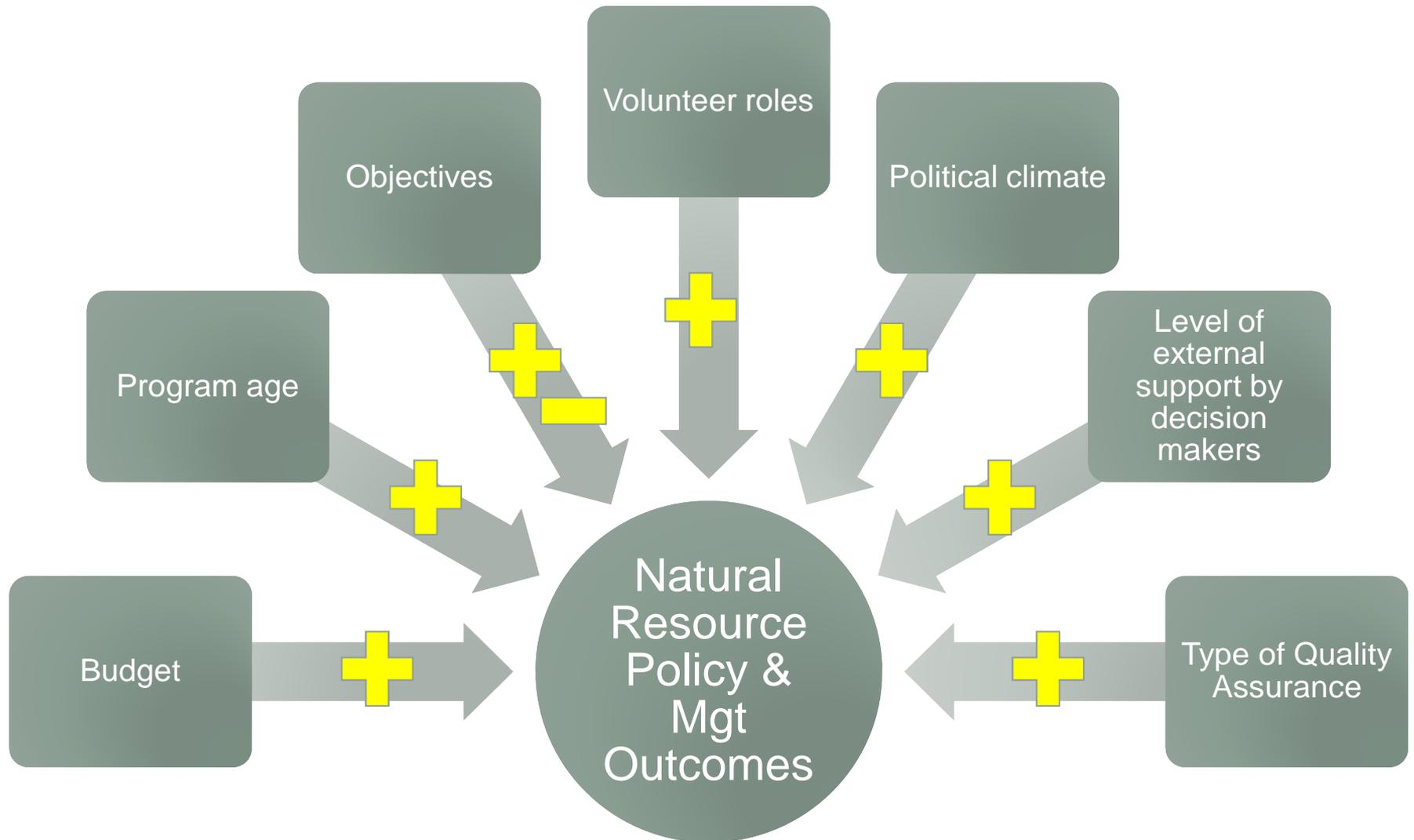
## Impact indices

- Equal Weight Index
  - Each “yes” weighted equally (1)
- Top Impact Index
  - More credit for one key impact per category (3)
- Geographic Area Impact Index
  - More credit for impacts at larger geographic scales

## Multiple regression



# Which program characteristics to consider?



# The “strongest” players in the models

1. Programs addressing an environmental crisis had more reported impacts
2. School-based programs had fewer reported impacts
3. Programs with larger budgets had more impacts – *except for waterbody restoration and protection impacts*
  - Obtain protected status for a waterbody
  - Justify altering land uses
  - Protect land from development
  - Obtain funding for restoration or protection

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Budget size doesn't matter for these types of impacts

# So what?

- Volunteer monitoring programs are achieving natural resource policy and management successes
  - Volunteer civic engagement
  - Especially at the local and state levels
  - Identification of when and where standards are being met
- Budget doesn't matter for every kind of impact
- Programs that coalesce and focus on addressing a crisis have more successes
- There is a distinction between educationally-focused school efforts and other volunteer monitoring efforts