

# GG 501 SPATIAL KNOWLEDGE MOBILIZATION

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1. Jan 4: Introduction to the course: Concepts, approach & tools

# INTRODUCTION TO THE COURSE

- Science → Graduate research, environmental/geographic research
- Spatial → data/observations that are geographically distributed
  - Place-based
  - Spatially-explicit
  - Geographic
- Knowledge Mobilization →
- SSHRC Definition:
  - “*an umbrella term encompassing a wide range of activities relating to the production and use of research results, including knowledge synthesis, dissemination, transfer, exchange, and co-creation or co-production by researchers and knowledge users*”

# COURSE FLOW AND ATTENDANCE



## Classroom

- Attendance/participation is mandatory for learning (and participation grade)
- Follow along with in-class code examples
- Discuss readings and data/science issues related to your own research
- Project/assignment work periods
- Non-zero risk of contracting COVID-19
- No connection issues – just travel
- Not recorded for posterity

## Virtual

- Attendance/participation is mandatory for learning (and participation grade)
- Follow along with in-class code examples
- Discuss readings and data/science issues related to your own research
- Project/assignment work periods
- Zero risk of contracting COVID-19
- May experience connection issues
- Not recorded for posterity

# COURSE COMPONENTS

1. Review readings w/ very brief lecture/discussions
2. Exercises and code-reviews in class
3. Case studies - code and output reviews in class
4. Assignments
5. Term Projects

# COURSE RESOURCES

1. Course website is central resource for materials
2. Zoom for remote delivery of classes
3. Readings – free online textbooks (links on course website)
4. Your own computer with R/R-Studio installed

# LEARNING OBJECTIVES

- Describe basic knowledge mobilization concepts
- Understand how data visualization fits within the environmental data analytics workflow
- Perform basic operations in R and R-Studio on your own machine
- Access course resources

# WHY SPATIAL KNOWLEDGE MOBILIZATION?

- Environmental research happens in **places** where people work and live, the results from all geographic/environmental research ultimately matter to a wide range of communities of interest, these include but are not limited to:
  - local community members, citizens
  - Indigenous communities
  - local government administrators / planners scientists
  - regional/provincial/territorial aministrators / planners and scientists
- As scientists, we must be equipped with skills to communicate technical information and concepts to a wide range of audiences
  - co-creation of local significance of research results
  - appropriate interpretation of findings, uncertainties, etc.
  - appropriate acknowledgement of local involvement in research

# DATA VISUALIZATION / VISUAL ANALYTICS

} one set of  
many possible  
names

## Visual analytics

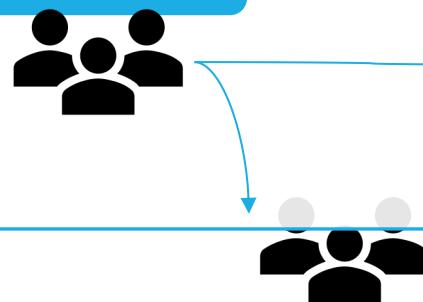
- discovering new things through visualization of data and models
- exploratory data analysis
  - exploratory spatial data analysis (ESDA)
- workflow is iterative and interactive
- Aim is gaining insights (Mainly personal use)
- Few scales and legends



within-team

## Visualization

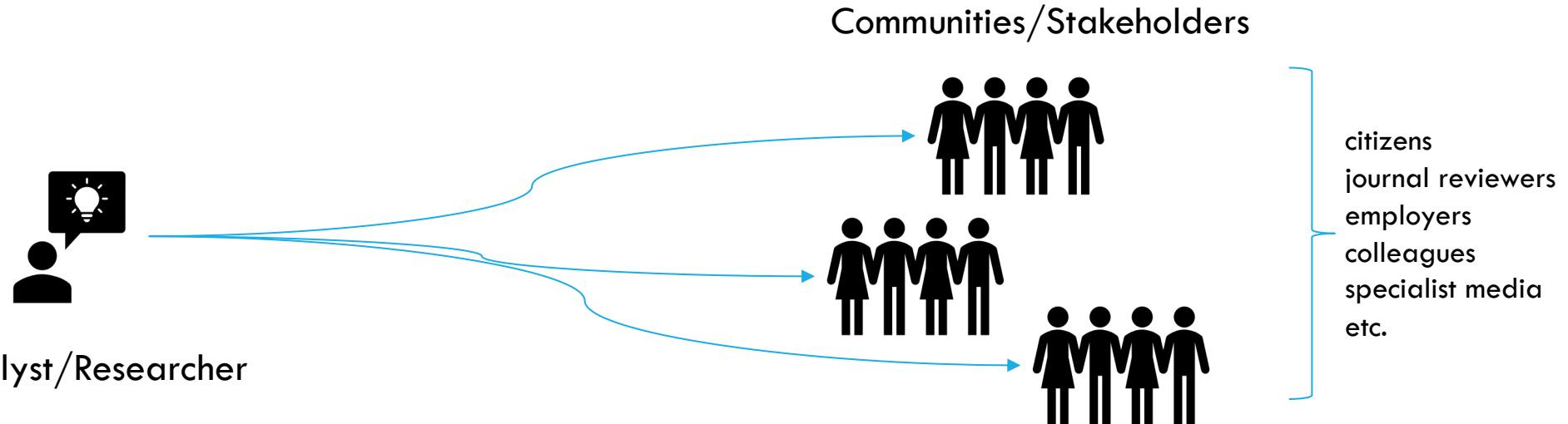
- aim is explicit communication to an audience
- extensive scales, grids and legends
- present results of an analysis of research project



between-team

# TELLING STORIES WITH DATA

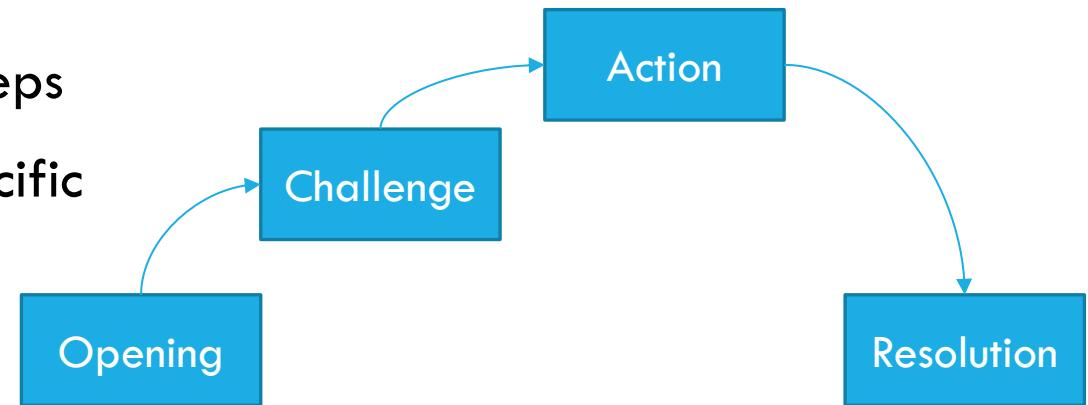
- Many visualizations exist for the purpose of communication



- A story is a set of observations, facts, or events which are presented in a way that create an emotional response
- Stories can be used as a way to frame the message, making it memorable and compelling

# TELLING STORIES WITH DATA

- Stories have arcs – they build up tension and end at a resolution
- Can frame a data story as a sequence of steps
- Visualizations can be used to illustrate a specific step or stage in a story
  - usually data stories require multiple visualizations
  - '[Data journalism](#)' has some excellent examples



# TELLING STORIES WITH DATA

- Aim to keep distinct elements of your story as clear as possible – build toward complex messages that need to be conveyed
- Don't need to visualize data dimensions that are tangential to the story
  - even if we have them and even if we could make a figure that showed them (very common graduate student problem is to try to show everything / all the work they've done)
- Use a consistent visual language for the different parts of a larger figure or for different elements of a data story
  - e.g., use consistent settings for all figures in a thesis or a report (you will notice this in professional research reports)
  - ggplot2 themes make it very easy to build a set of visualizations with a consistent visual language

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