

# Radon Mapping at Health Canada

CARST RADON MAP WEBINAR 2020

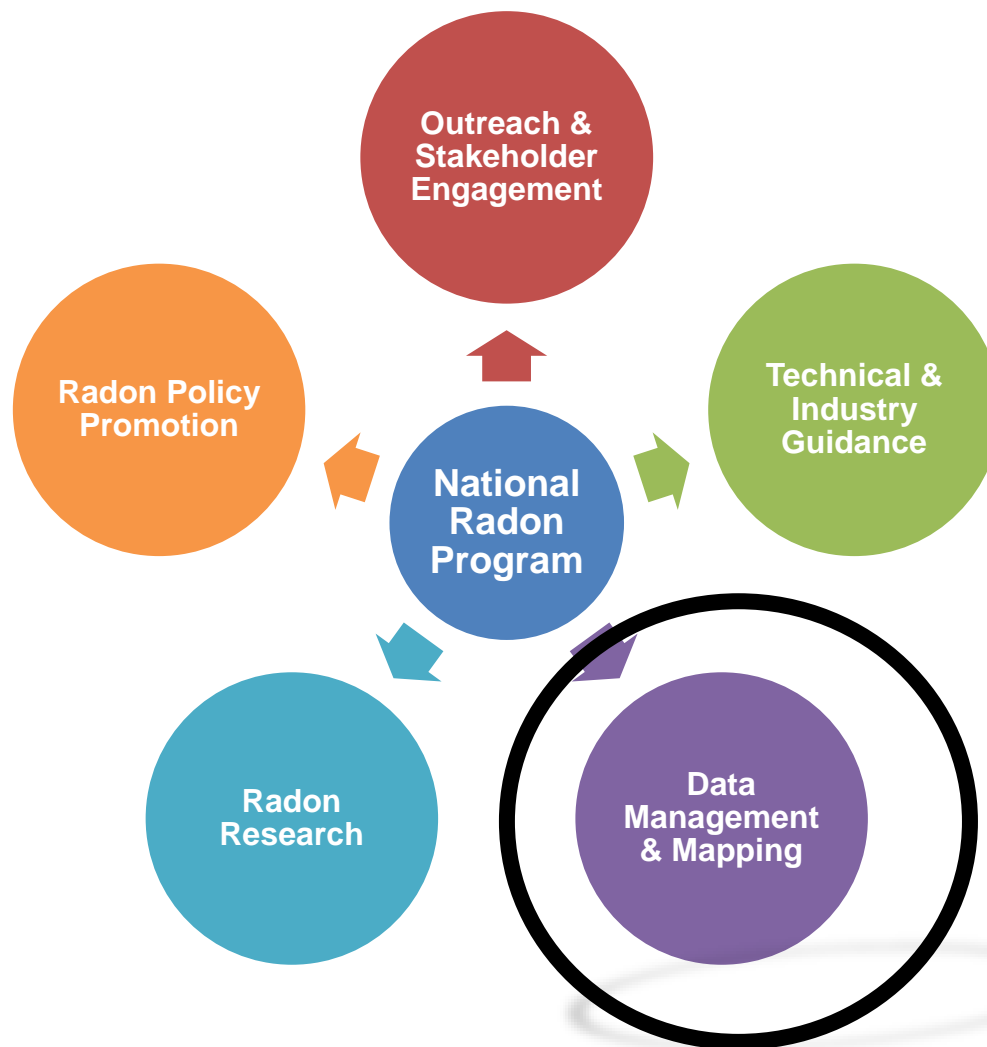
Colin Gutcher – Health Canada

April 21<sup>st</sup> 2020



YOUR HEALTH AND SAFETY... OUR PRIORITY.

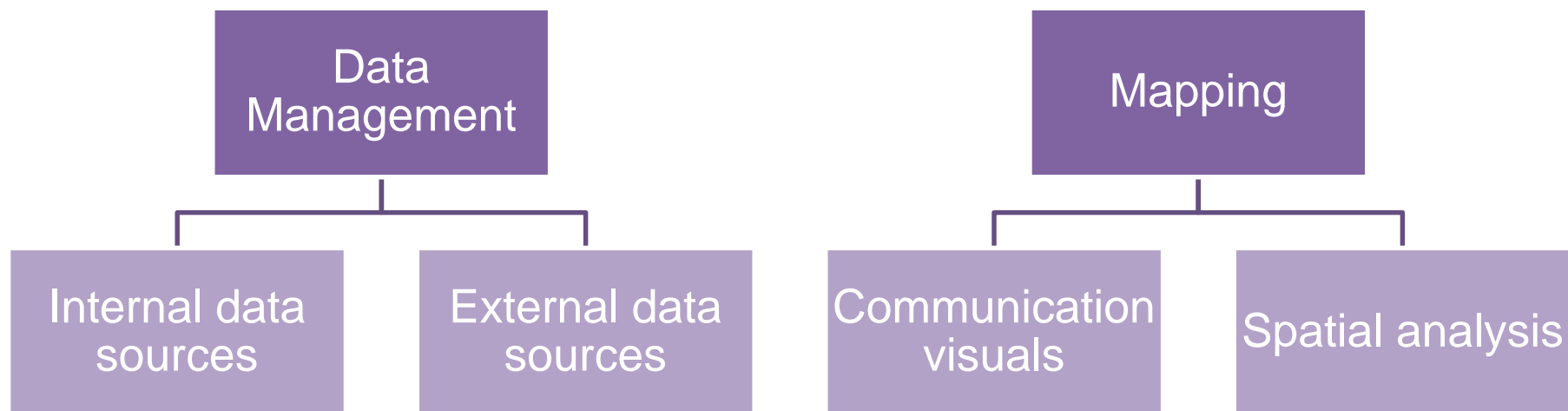
# National Radon Program (NRP)



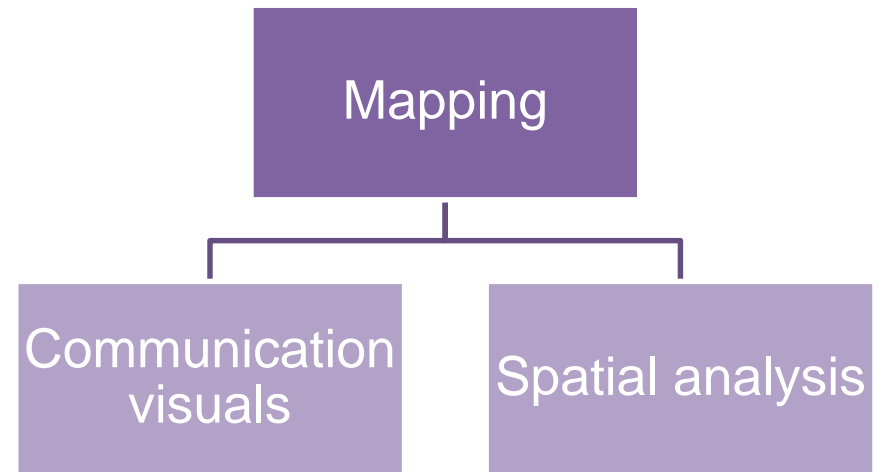
# NRP - Data Management and Mapping

- Support the NRP and HC by providing information and insights so that informed decisions can be made regarding radon risk
  - Support various Outreach, Research, and Stakeholders' initiatives
  - Support Policy recommendations
  - Shape futures goals and priorities of the program
- Data Management
  - Manage data from the other pillars of the program in a central location
  - We manage our own data, on internal servers
  - Presently our collections contain ~35 000 radon measurements across all sources
- Mapping
  - Create models to extend our knowledge and bridge knowledge gaps
  - Create communication tools

# NRP - Data Management and Mapping



# Mapping – Communication visuals





# Communication Visuals - Latest Work

- Blog Post
  - Latest version of reporting our Radon Surveys

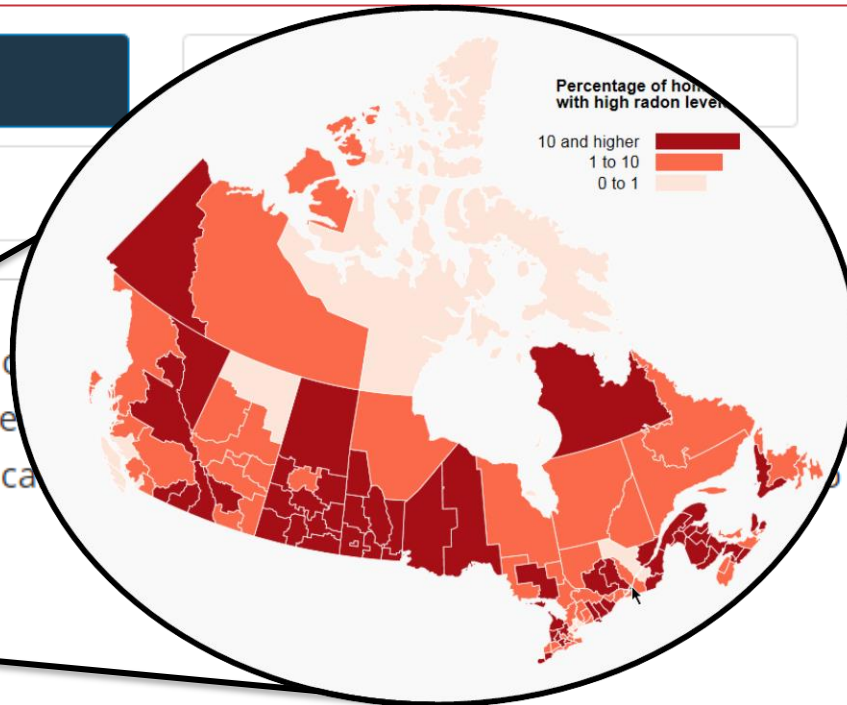
## Radon: About

About radon

[Reducing levels in your home](#)

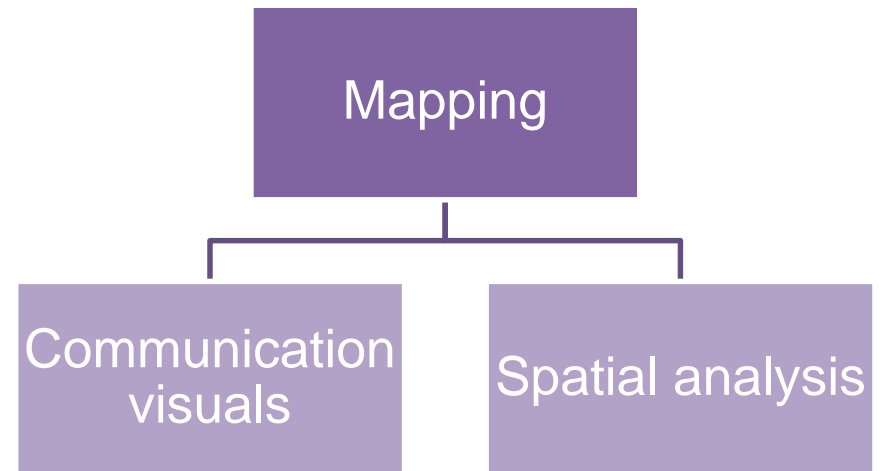
Radon is a radioactive gas that is colorless, odorless, and tasteless. When radon is released into enclosed spaces, like homes, it can

Radon Map



On this page

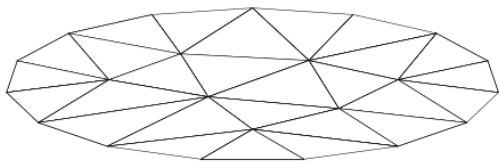
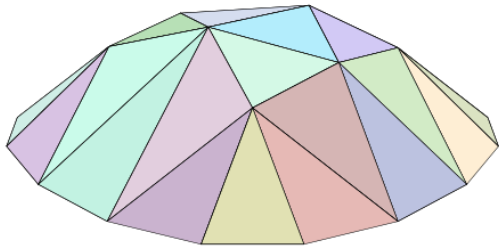
# Mapping – Spatial Analysis



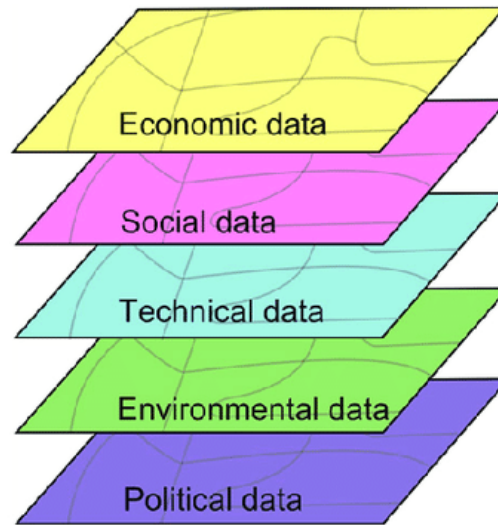


# Mapping – Spatial Analysis

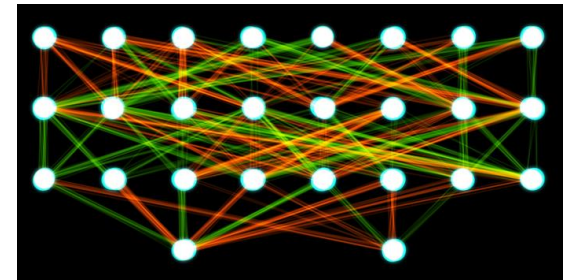
- Modelling fills knowledge gaps and simplifies complex systems
- Several approaches each with their own pros and cons



Linear interpolation



Multi-component analysis



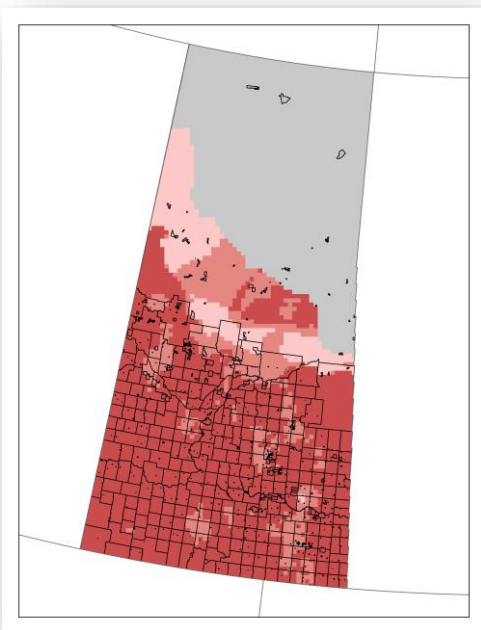
Artificial neural network

# Mapping - Spatial Analysis

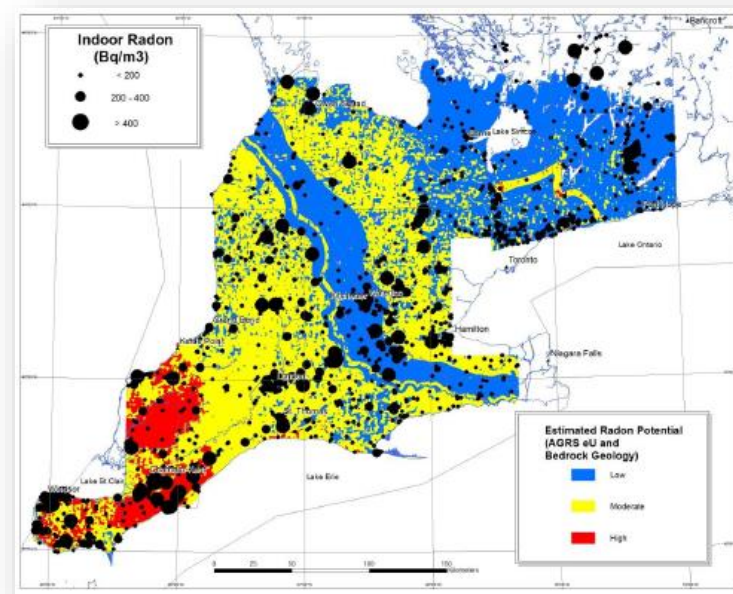
## Goals

- Developing a national radon exposure map
- Determine communities at greater risk of radon

Indoor measurement  
interpolation model

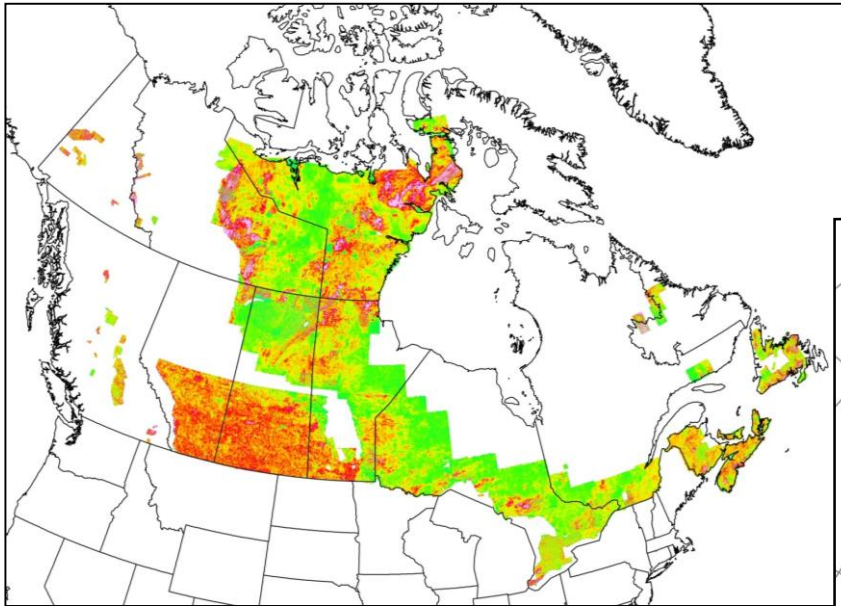


Geologic multi-component  
model

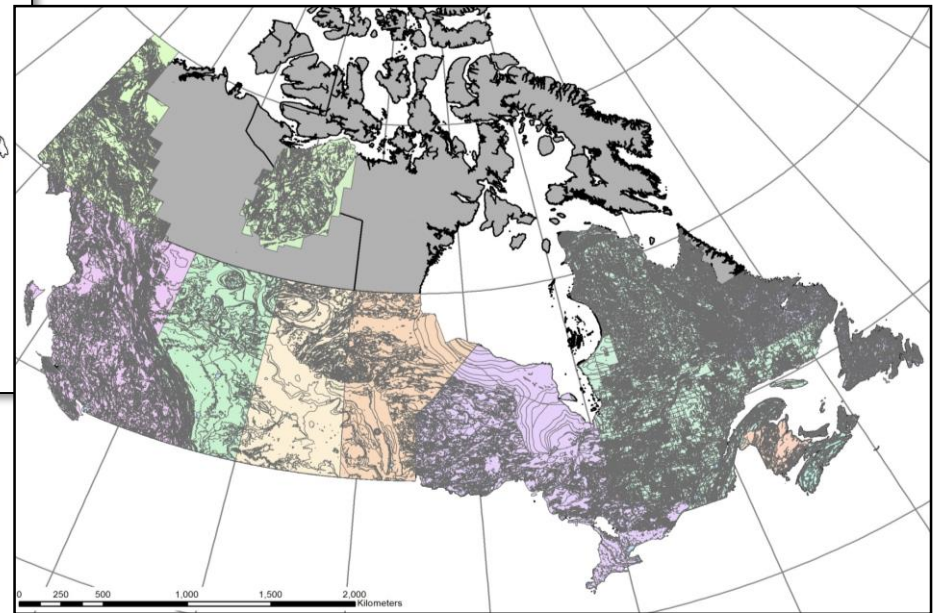


# National Radon Map - Challenges in the Canadian Context

Incomplete coverage

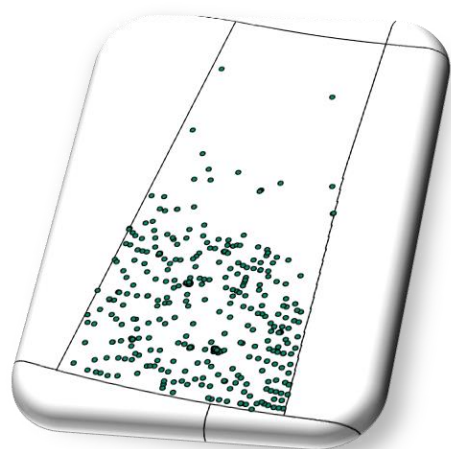


Inconsistent information

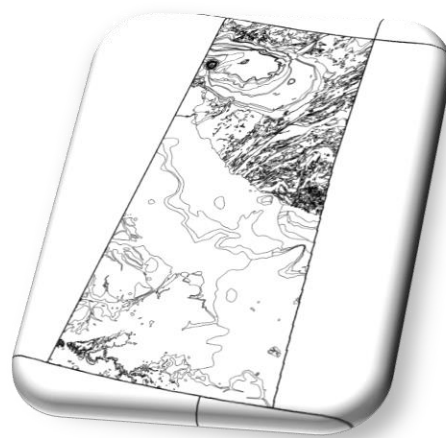


# National Radon Map – Methods

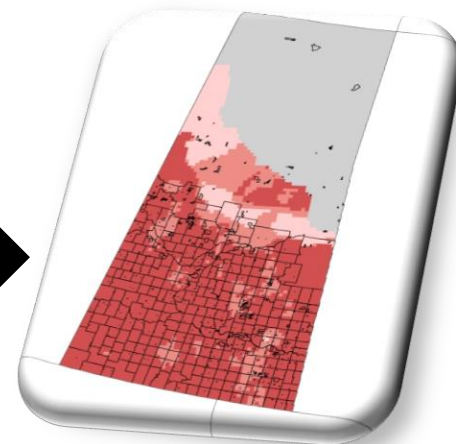
- Based on indoor radon measurements and bedrock formations



Indoor Values

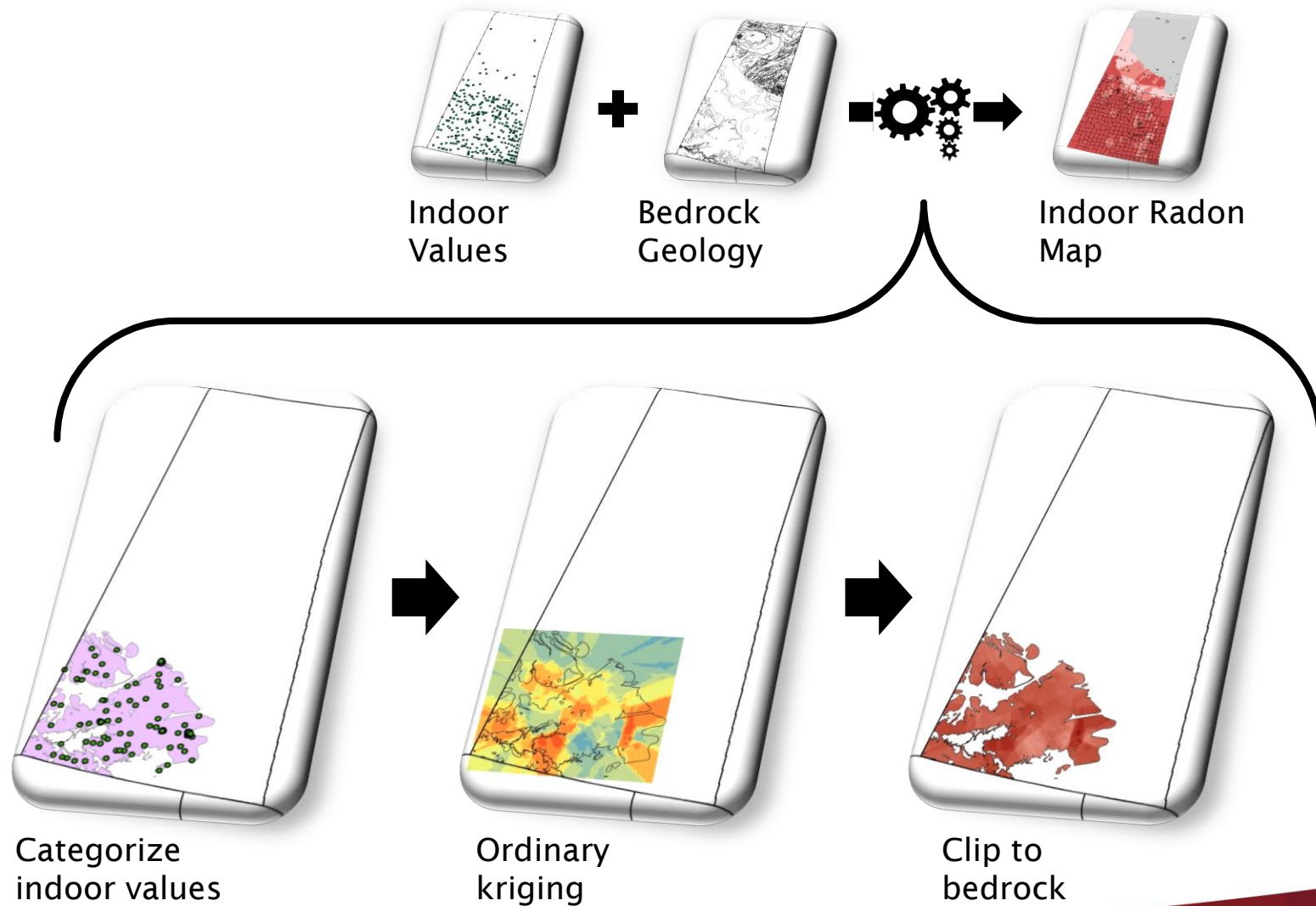


Bedrock Geology

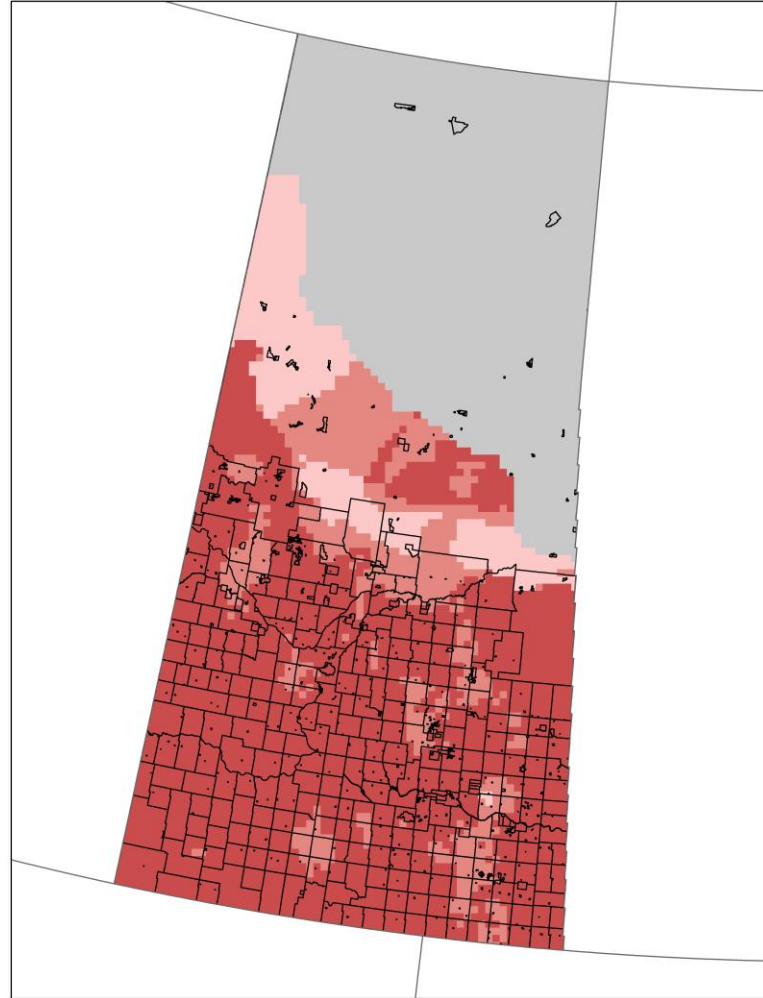


Indoor Radon Map

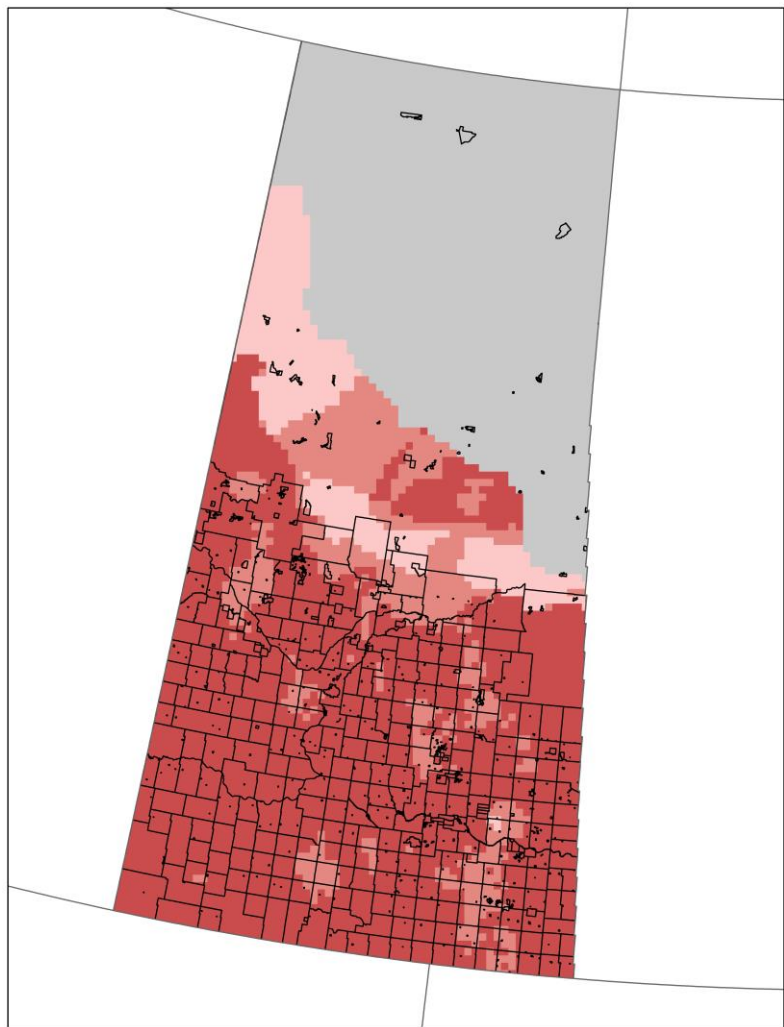
# National Radon Map - Methods



# Mapping – National Radon Map



## Mapping - Criteria for Radon Prone



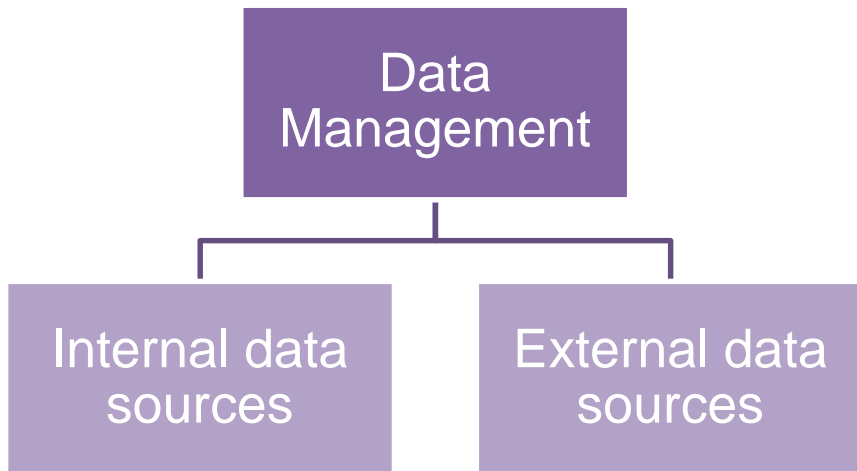
- Currently use the probability of a residence testing above the guideline
- Report risks rather than actual measurements
- For the broader context still an ongoing discussion
- Geologic components which we have assessed are:
  - $eU > 2$
  - Bedrock U concentrations  $>10\text{ppm}$

# Mapping – Current Data Sources

- Radon
  - Cross Canada Radon Survey (CCRS)
    - ~13 000 measurements
    - 90 day alpha track detectors
    - Guideline compliant measurements
    - Varying geolocation accuracy
      - Approximately 60% of measurements are rooftop accurate
- Bedrock
  - Provincial geologic surveys and natural resource ministries
    - All provinces, and Yukon
    - Regional scale



# NRP - Data Management



# Data Management – Internal Sources

- Mostly manage our own information – data from several projects
- Cross Canada Survey, Federal Building Survey, several research projects
  - ~20 000 residential measurements
  - ~15 000 office/industrial measurements
  - Some information is publically available by FSA and Health Region
    - Occupational federal buildings will be online in 2020 or 2021
- Available data can be found online
  - [open.canada.ca/en/open-data](https://open.canada.ca/en/open-data)

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## Data Management – External Sources

- Health Canada in collaboration with C-NRPP is interested in collecting radon information from industry in order to strengthen our models, and refine risk areas
  - How can we ensure research integrity and quality based off of datasets with mixed origins?
- Provide stronger evidence and tailored products for municipalities and provinces, encouraging radon reduction policies
- Privacy issues
  - How will personal and confidential business information be protected?

# Data Management – Privacy

## Internally sourced data

- All personal information is subject to the *Privacy Act*
  - Care and custody requirements
  - Information used solely for the purpose which it was collected
  - Exempt from the *Access to Information Act*

## Externally sourced data

- Third party information in Health Canada's possession is protected by:
  - the *Privacy Act*
  - the *Access to information Act*
  - Information Sharing Agreements
  - Sensitive components are only kept as long as necessary

## Summary

- Mapping
  - We are developing models to support evidence based decision making for all government levels
- Data Management
  - Sharing radon data will allow us to strengthen this evidence with more robust models
  - All while keeping personal and confidential information safe
  - HC has publically available information
- Identifying communities at risk
- Support radon protection initiatives

# Thank you

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For more information: [canada.ca/radon](http://canada.ca/radon)  
[canada.ca/le-radon](http://canada.ca/le-radon)

Open Data: [open.canada.ca/en/open-data](http://open.canada.ca/en/open-data)  
[ouvert.canada.ca/fr/donnees-ouvertes](http://ouvert.canada.ca/fr/donnees-ouvertes)