



Indoor Radon levels in Windsor-Essex County households 2016 to 2018

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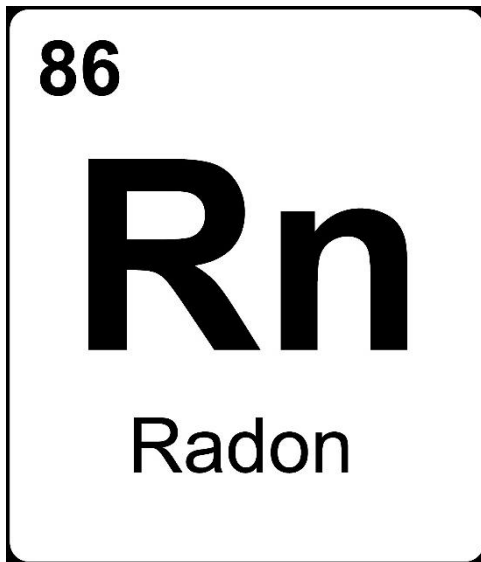
OUTLINE

- Background
- Methodology
- Results
- Discussion
- Next steps

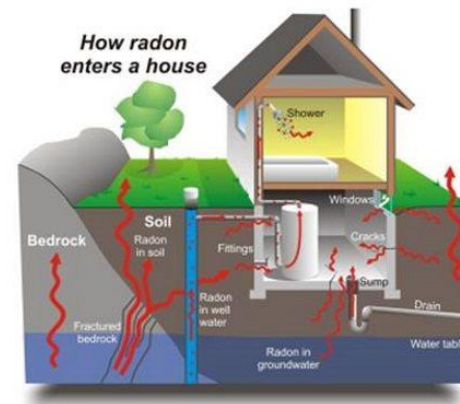


WHAT IS RADON?

- Naturally occurring odourless/colourless gas
- Second leading cause of lung cancer



How Radon Gets In Your Home

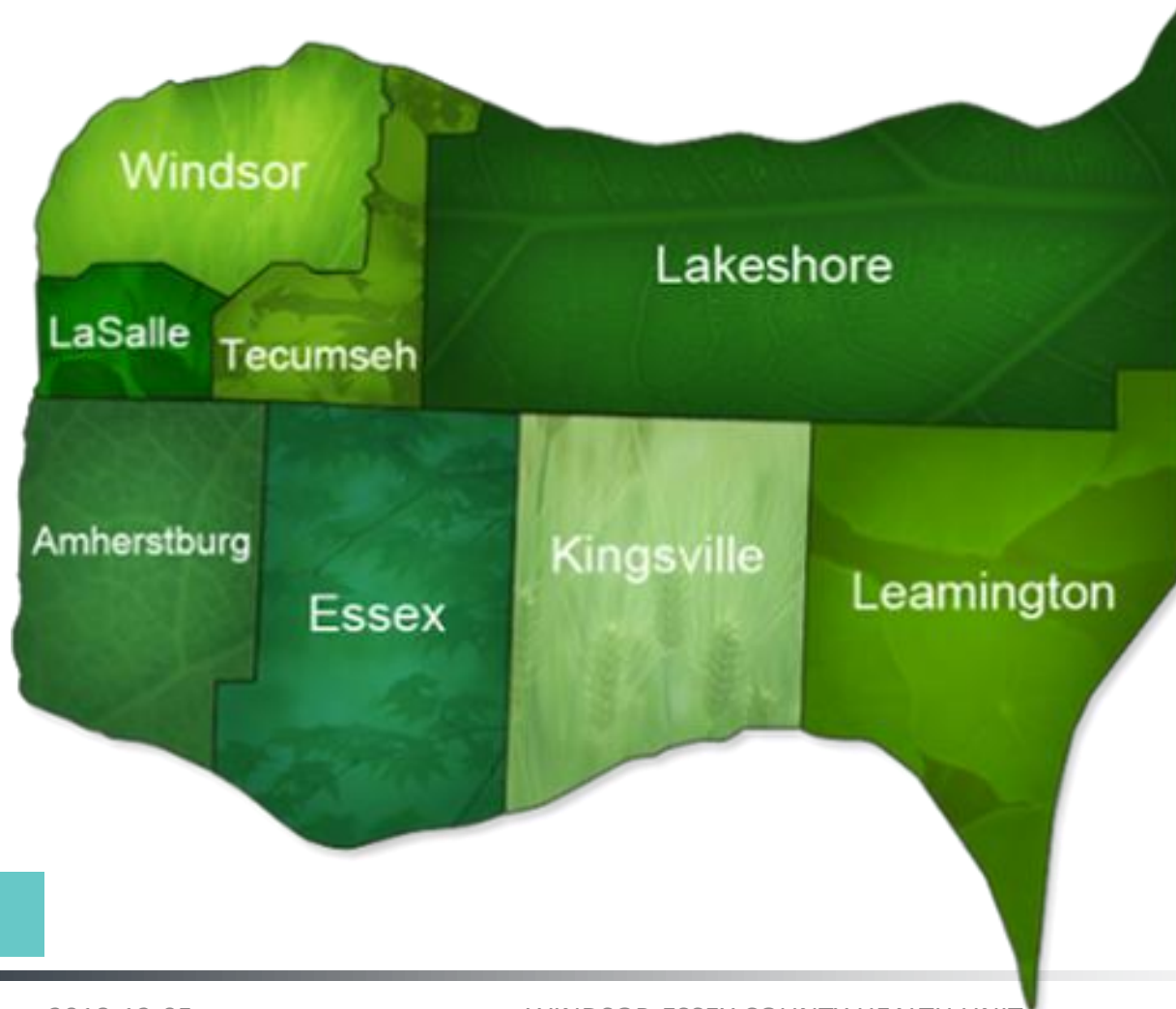


INDOOR RADON GUIDELINES

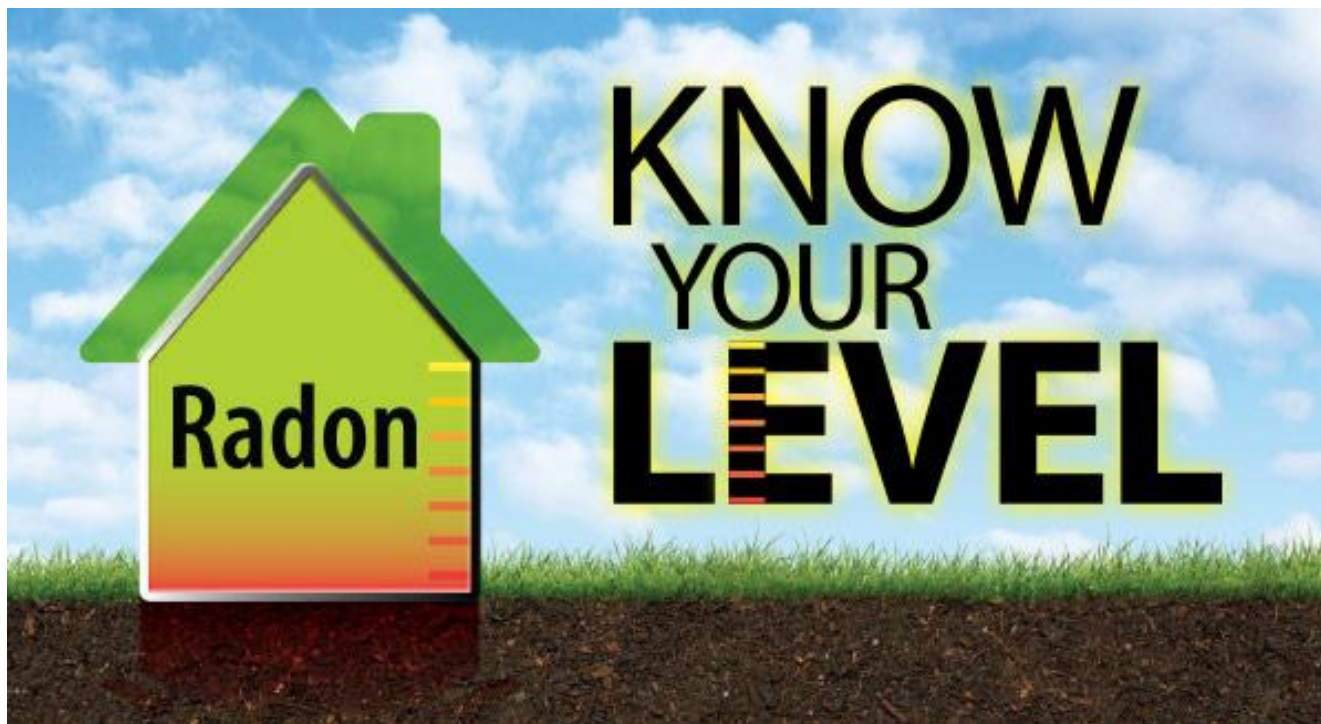
| Country | Recommended action levels (Bq/m3) |
|---------------------------|-----------------------------------|
| Canada | 200 |
| U.S.A | 148 |
| England | 200 |
| France | 400 |
| Germany | 100 |
| World Health Organization | 100/300 |



Windsor-Essex County Region



“KNOW YOUR LEVEL RADON STUDY ”

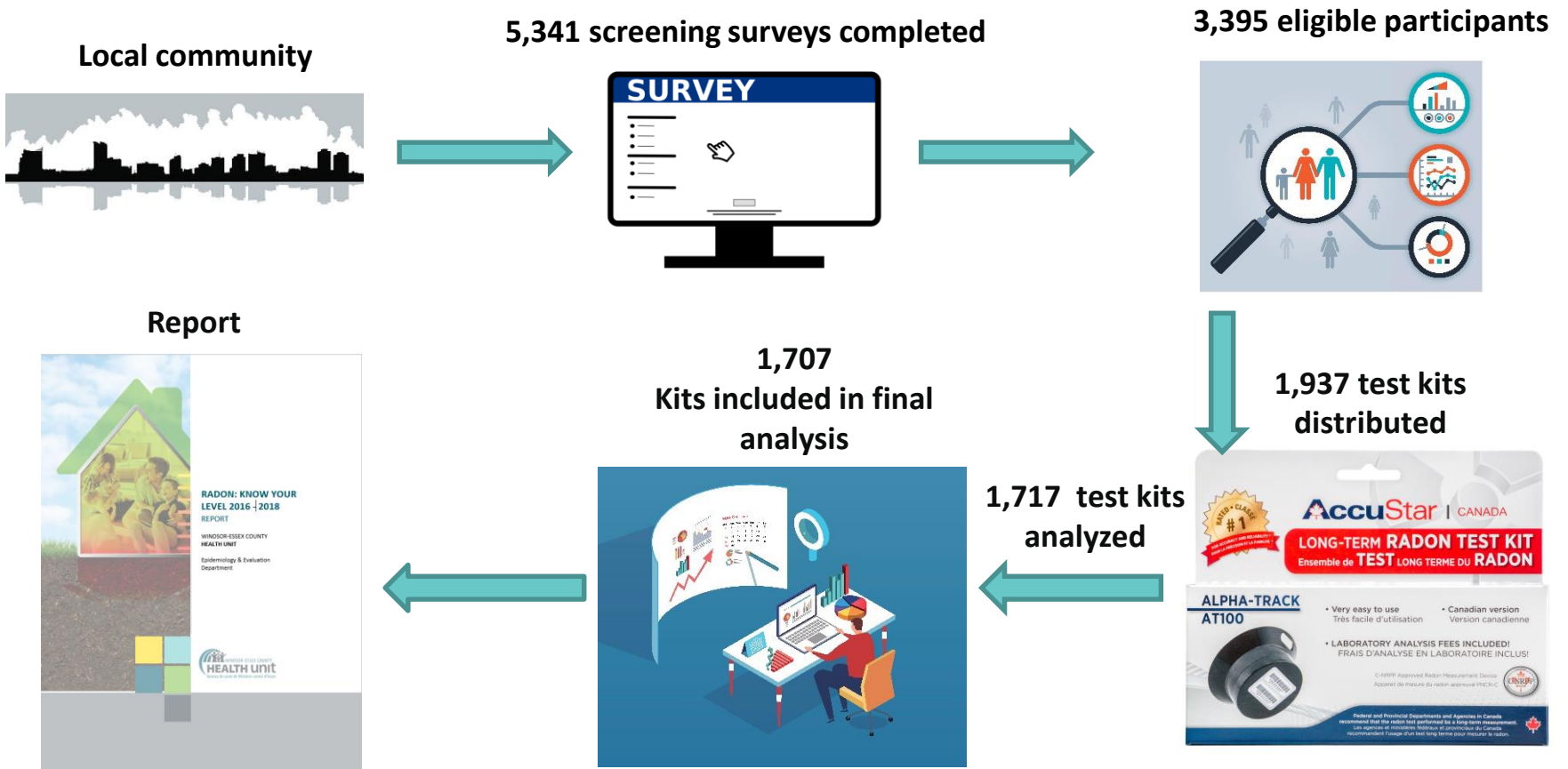


“KNOW YOUR LEVEL RADON STUDY ”

Objectives:

- Determine radon levels and areas of highest risk in Windsor-Essex County (WEC)
- Increase awareness and inform the public of radon risk
- Provide residents with radon reduction resources

PROCESS

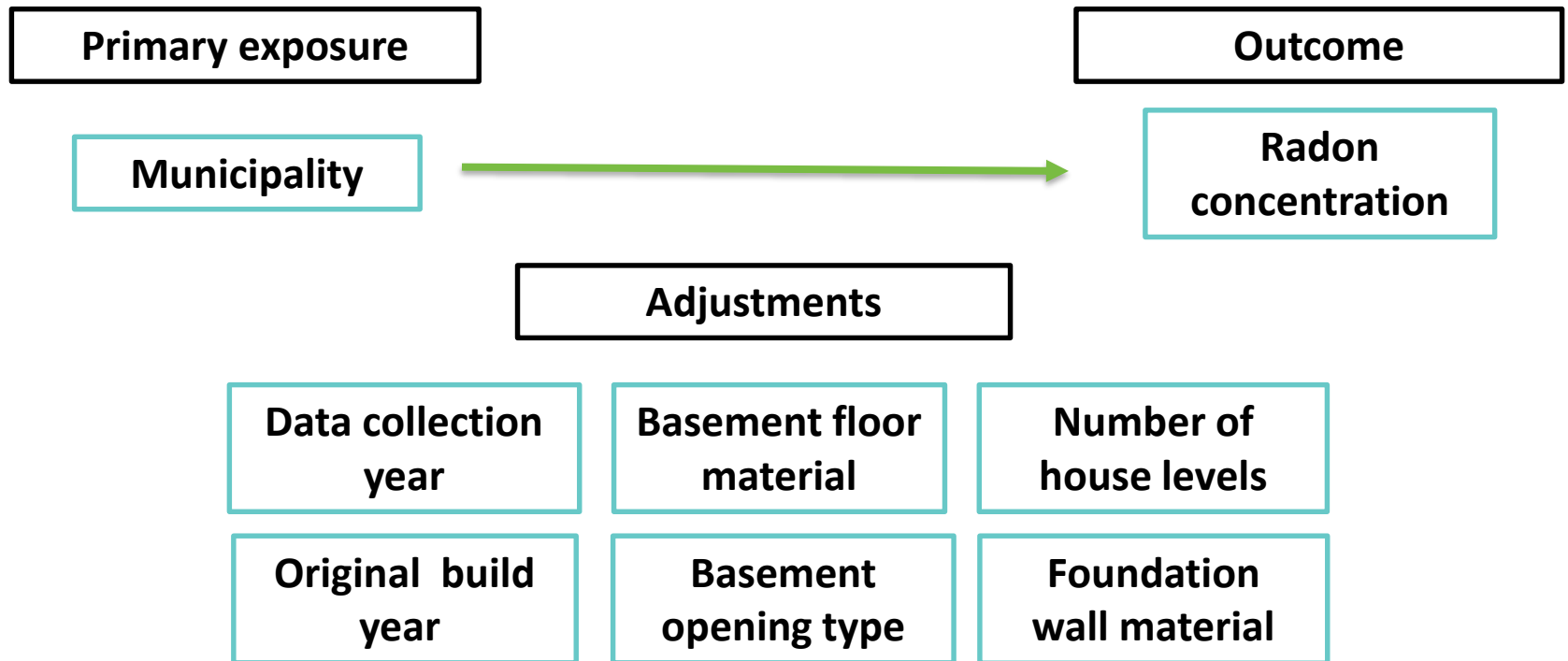


KIT DISTRIBUTION

| Region | Total | % of total kits distributed | % private dwelling in WEC |
|-------------|-------|-----------------------------|---------------------------|
| Amherstburg | 126 | 6.5 | 5.3 |
| Essex | 101 | 5.2 | 5.2 |
| Kingsville | 105 | 5.4 | 5.0 |
| LaSalle | 198 | 10.2 | 6.4 |
| Lakeshore | 176 | 9.1 | 8.2 |
| Leamington | 51 | 2.6 | 6.4 |
| Tecumseh | 177 | 9.1 | 5.3 |
| Windsor | 1003 | 51.8 | 58.0 |
| Total | 1937 | | |



CONCEPTUAL MODEL



MODEL BUILDING

- Step-wise backward model selection
- Generalized linear model (GLM)
- Log-transformed outcome
- Kit distribution survey weight



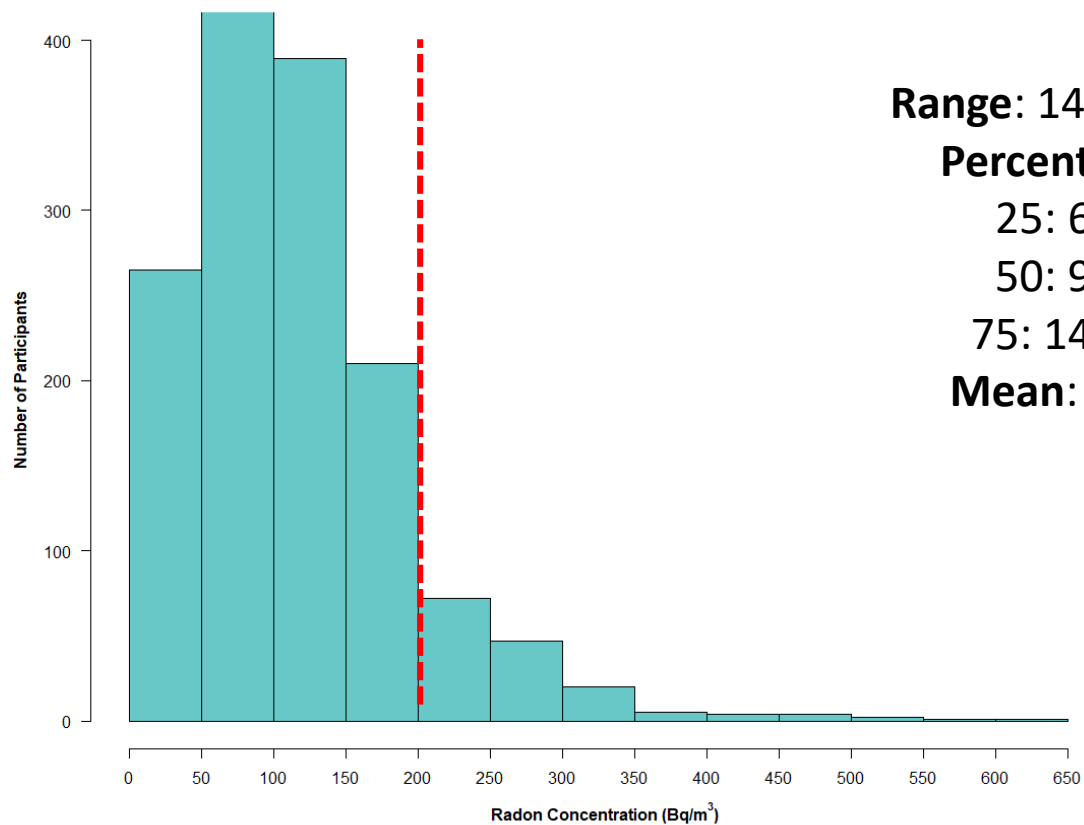
RESULTS- REGRESSION

| Predictor | Odds ratio | Df | P-value |
|----------------------|--------------|----|---------|
| Municipality | See Figure 2 | 7 | 0.002 |
| Build year | See Figure 4 | 10 | 0.000 |
| Concrete b. floor | 1.26 | 1 | 0.001 |
| House levels | See Figure 6 | 3 | 0.000 |
| Vents | 0.92 | 1 | 0.004 |
| Drains | 1.00 | 1 | 0.950 |
| Cracks b. floor | 1.05 | 1 | 0.159 |
| Sump pump | 1.06 | 1 | 0.136 |
| Earth/dirt b. floor | 0.86 | 1 | 0.026 |
| Cinder block f. wall | 1.09 | 1 | 0.009 |
| Cycle year | 0.73 | 1 | 0.000 |



RESULTS- RADON LEVEL DISTRIBUTION

Radon Levels in Participating Houses- Windsor-Essex County, 2016-2018



Range: 14 to 610

Percentiles:

25: 63

50: 92

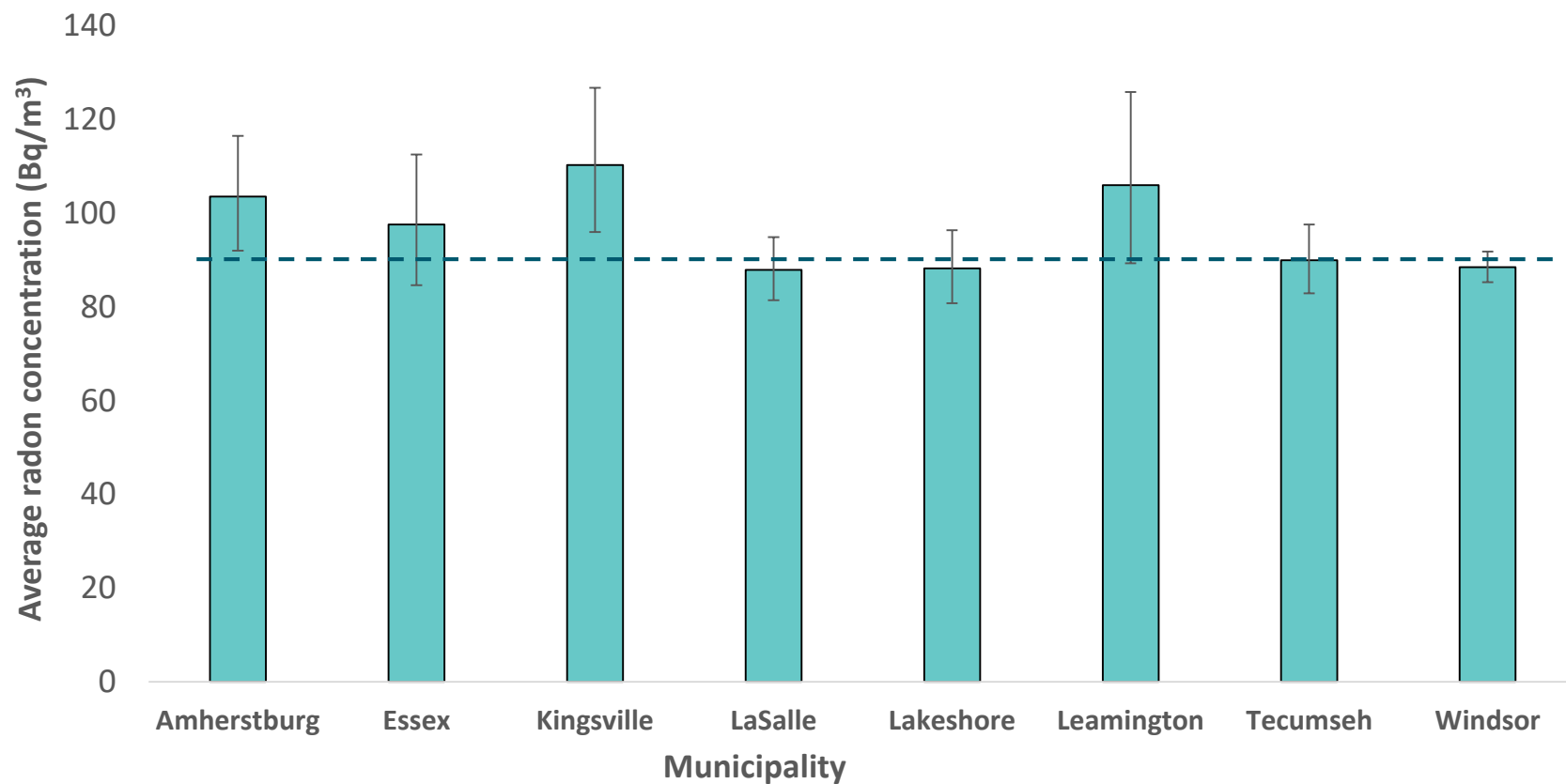
75: 1412

Mean: 110



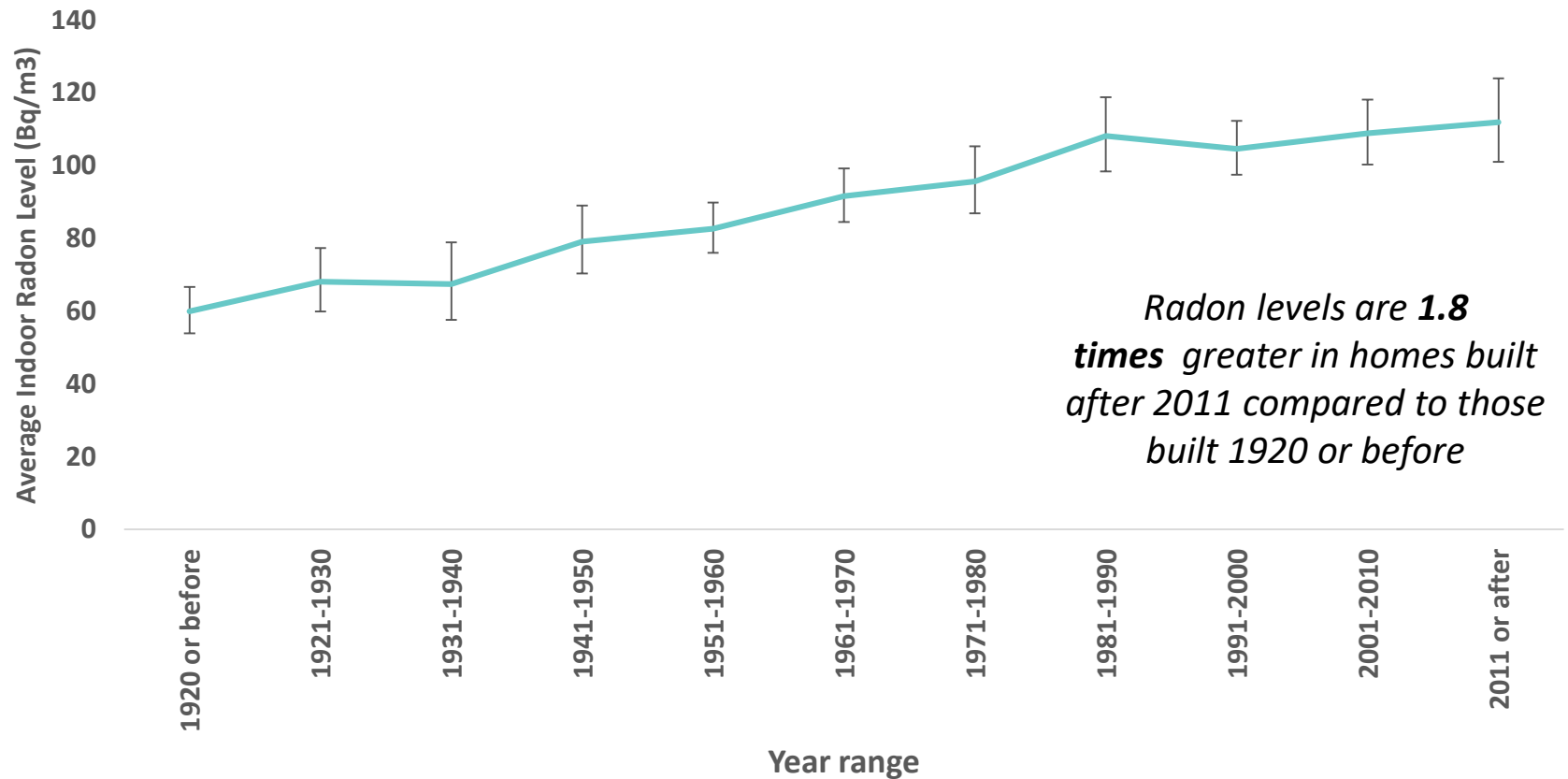
RESULTS-REGIONAL DIFFERENCES

Radon levels in participating houses by municipality, 2016-2018



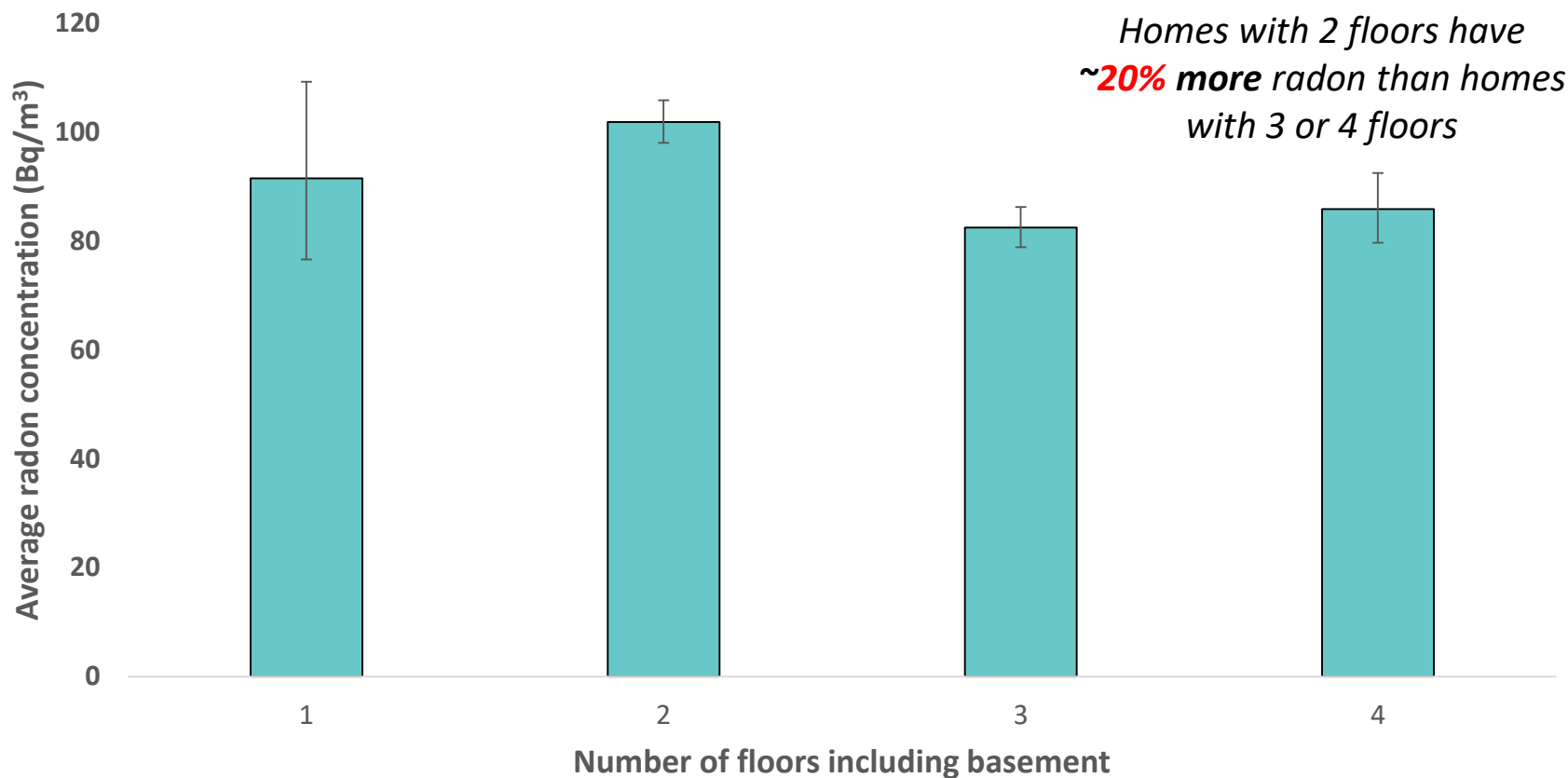
RESULTS- CONSTRUCTION YEAR

Radon Levels by original house build year, 2016-2018



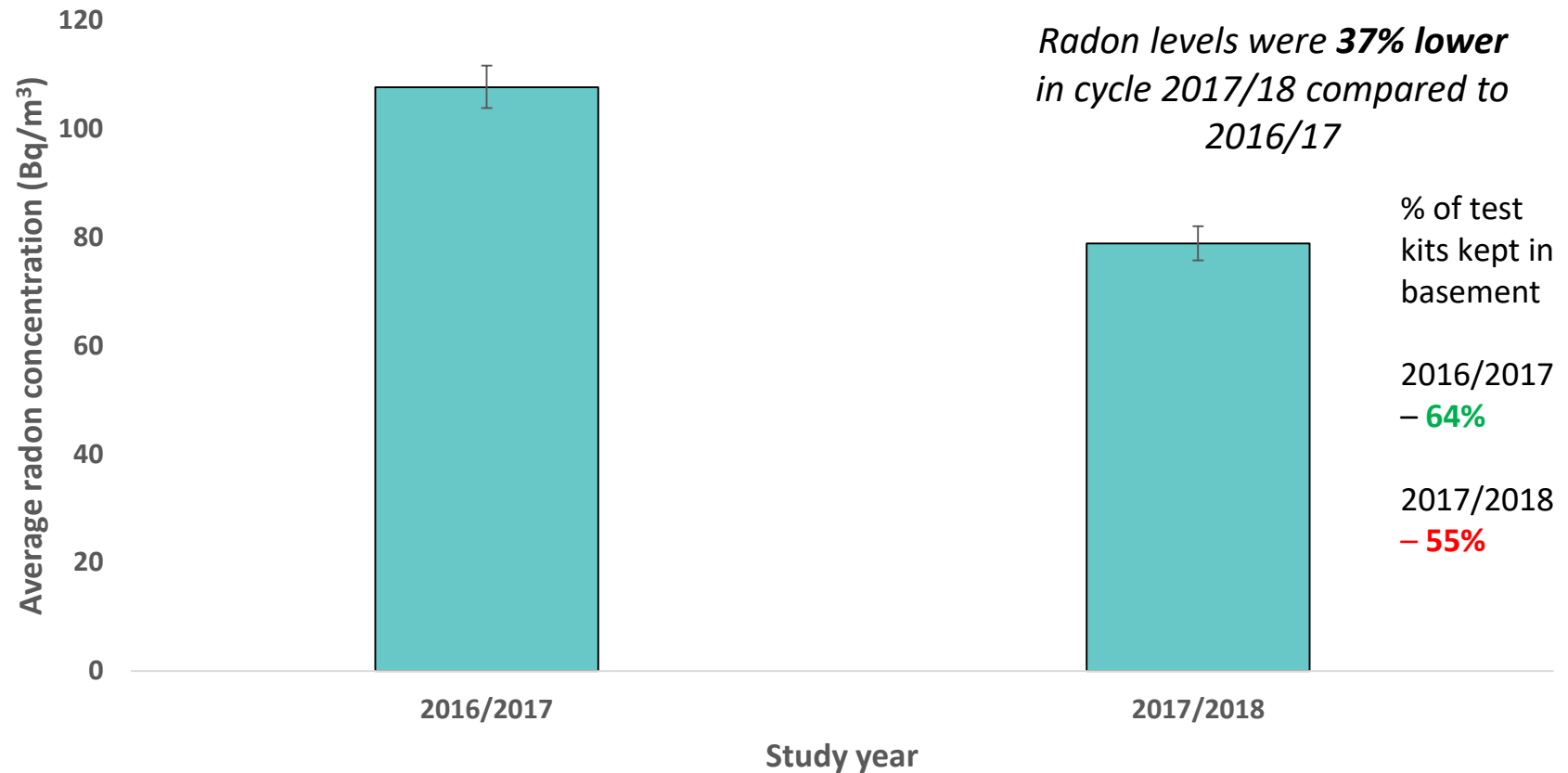
RESULTS- HOUSE HEIGHT

Radon levels by number of floors, 2016-2018



RESULTS- STUDY YEAR

Radon levels by study year



DISCUSSION

- 11% of WEC homes exceeded guidelines
- Municipality differences
- House characteristics
- Difference in study year
 - Location of test kit



LIMITATIONS

- Convenience sampling
- Identifying house characteristics in survey
- Only residential detached homes were considered



NEXT STEPS - RESOURCES



NEXT STEPS- REMEDIATION

Floor crack seal



Piping system



Membrane installation



ACKNOWLEDGEMENT

Mathew Roy

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Karen Lukic

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Environmental Health



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QUESTIONS?

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