2014/15 National Radon Survey

Methodology and Preliminary Results

Dr. Patrick Murphy

UCD School of Mathematical Sciences

The 2014/15 project was led by the EPA with Statistical Advice and Analysis provided by UCD

Outline

- Background
- Sampling and Methodology
- Data
- Analysis
- Preliminary Results
- Significance of Results
- Future Work

Background

THE National Radon Survey

- Conducted between 1992-1999
- 10km Grid Squares
- 11,319 houses measured
- 12 Month Measurements
- 89Bq/m^3 average indoor conc.
- Formed basis for map, all future work and legislation

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NEW National Radon Survey - Why?

- Previous Survey now 15 years old
- Substantial number of houses built since 1999
- Has average indoor concentration changed?
- Is risk to population different?
- Effect of building legislation?

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Methodology

Methodology

- Replicate Previous Methodology?
- Cost & Time - Limitations
- Sampling

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Methodology

- 3 Month instead of 12 Months *(Based on Previous Research conducted by EPA and UCD)*
- Stratified Sample of 60 Grid Squares with Higher Response Rate to Previous NRS
- Stratified by Geography and Radon Level
- Invitation followed by Household Survey plus Detectors
- Issued Aug, Sept & Oct 2014

Data

Data

- Addresses Selected from Geo-Directory
- Invitation Letters: Non Contacts ~ 3%
- 755 questionnaires issued
- 573 Questionnaires returned
- 548 Accepted

Data

- 649 houses returned usable detectors
- Living room and Bedroom detectors as in Previous NRS
- All 649 houses included in National Average

Data

- Further analysis by house type required matching records from questionnaire and detectors returned
- 542 usable matches

Analysis

Analysis

- Outlier Detection
- Check for Lognormality
- Check for Bias due to response rate and length of detection period
- Weighting of Data
- New National Average
- Analysis by House Type and Year of Construction

Results

Preliminary Results

- No Significant Outliers
- Data found to be Lognormal
- No Bias: Responses not-correlated with previous NRS Radon Levels
- No Bias due to detection period
- Weighting performed

Preliminary Results

New National Average Indoor Radon Concentration

- Previous NRS 89.27 Bq/m^3
- New NRS 77.03 Bq/m^3

- 95% Confidence Interval

(71.07 Bq/m^3 , 83.49 Bq/m^3)

Preliminary Results

Results by Year of Construction

- Previous NRS 89.27 Bq/m^3
- New NRS Pre 98 Avg 86.14 Bq/m^3
- New NRS Post 98 Avg 64.23 Bq/m3

Significance of Results

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- Impact of past 15 years of work by RPII/EPA
- Awareness
- Building Regulations
- Remediation
- Still a long way to go

Future Work

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- Incorporate information on Population Density to produce Population Average and Risk Measurements

Thank You