

## EXST7015 : Daily Design Question 04

Carefully read the description of the experiment below. Be prepared to answer the questions that follow the design description as a class quiz.

Radon is a radioactive gas of some concern in certain areas of the country. The recommended level of radon in the air of a home is less than 4 pCi/L (picocuries per liter). Unfortunately, large areas of the country have a predicted average indoor radon screening of about 4 pCi/L (see EPA's Map of Radon Zones below from <http://www.epa.gov/iaq/radon/zonemap.html>).

A housing contractor in western Massachusetts (an area with moderate potential for radon (from 2 to 4 pCi/L) is interested in estimating background levels of radon in homes in his vicinity. He randomly selects 200 homes from a street map and requests permission from the homeowner to take measurements by offering a free radon test. He takes 5 samples from each house at randomly selected locations within the house. The variable of interest is the mean household radon level. He primarily wants to estimate the variability and determine what percent of homes exceed the recommended level (4 pCi/L).

Questions:

What is the treatment arrangement for this experiment?

- (a) single factor (b) factorial (c) nested

What is the experimental design for this experiment?

- (a) CRD (b) RBD (c) LSD (e) Split-plot (d) Repeated Measures

Does it seem to you that the treatments are fixed or random?

- (a) fixed (b) random

What is the experimental unit for this experiment?

- (a) homeowner (b) a house or home (c) radon level (d) location within a house

What is the sampling unit for this experiment?

- (a) homeowner (b) a house or home (c) radon level (d) location within a house

What is the dependent variable for this experiment?

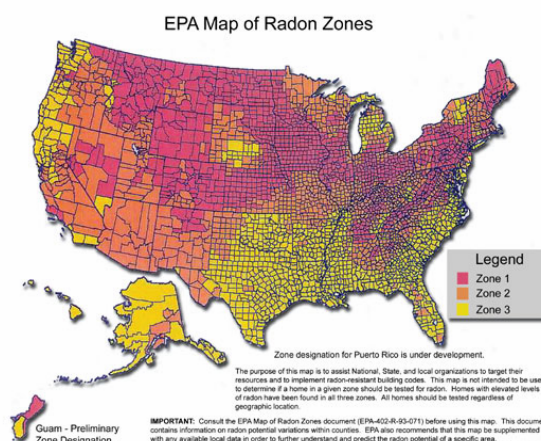
- (a) homeowner (b) a house or home (c) radon level (d) location within a house

If the design is RBD, what are the blocks?

- (a) homeowner (b) a house or home (c) radon level (d) location within a house

How many degrees of freedom are available for testing the treatments?

Enter the correct value here: \_\_\_\_\_



Zone 1 counties have a predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter) (red zones)

Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L (orange zones)

Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L (yellow zones)