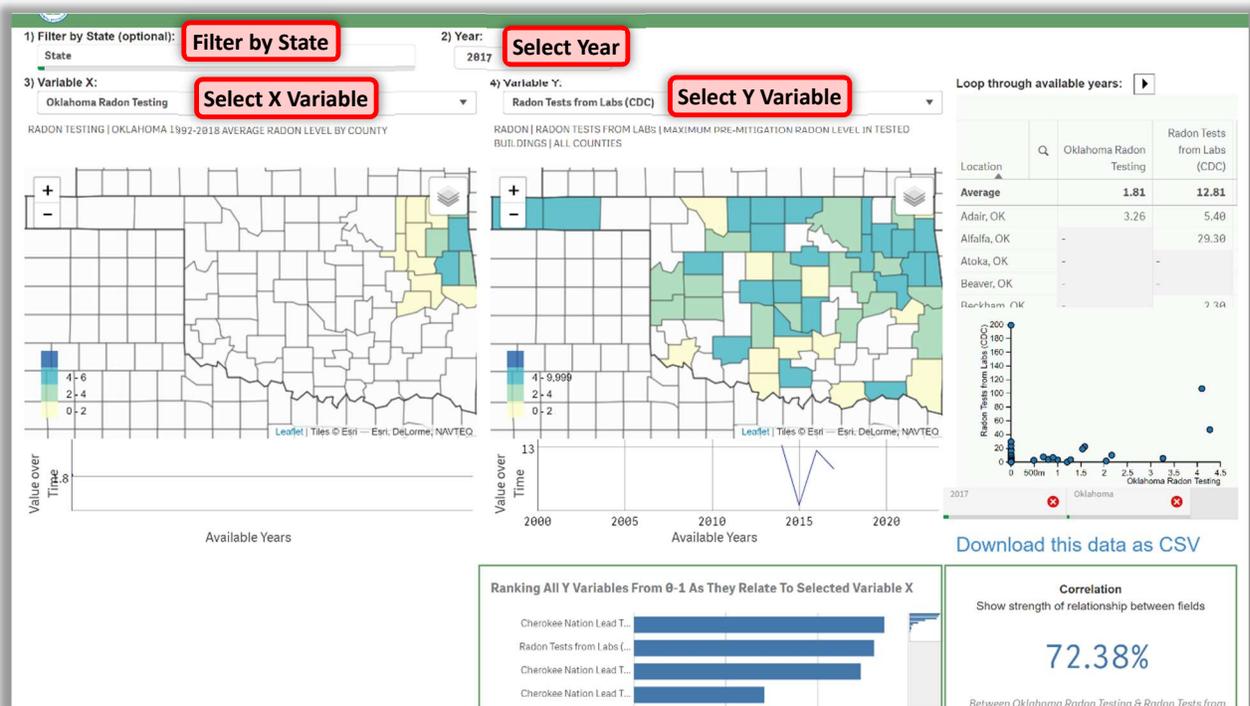




Source Assessment Mapping Interface for Environmental Health Data Visualizations or SAMIEHD-Vis TUTORIAL

To help you get familiar with the SAMIEHD-Visualization's features, we'll use the tool to look at Radon exposure levels in Oklahoma.

SELECTING DATA



Filter by State: Optionally, you can search for and select your state(s) or territory(s) of interest in the dropdown. Click the checkmark icon to confirm your choices. *For this example, we'll limit our search to Oklahoma.*

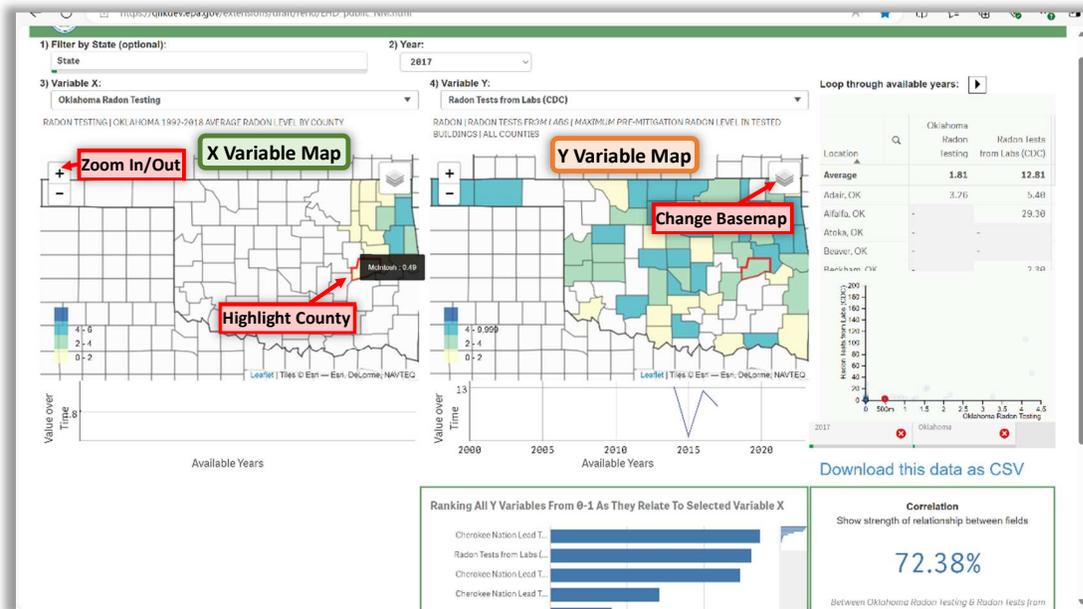
Select Year: Use the dropdown to select the year of interest. There is also an option to loop through each year with available data. Note that some datasets are not available for all years. *For this example, we'll select 2017 as the year.*

Select X Variable: Use the "Variable X" dropdown to select an independent variable, which the **map on the left side of the screen** will display. *For our case study, we'll use "Oklahoma Radon Testing" provided to EPA via the Cherokee Nation in northeastern Oklahoma.*

Select Y Variable: Use the “Variable Y” dropdown to select a response variable, which the map on the right side will display. Please note that the Y variable options are filtered to only show datasets related to the X variable chosen. *There should be 3 options available with “Oklahoma Radon Testing” set as the X variable; try selecting “Radon Tests from Labs”* (according to: <https://ephtracking.cdc.gov/DataExplorer>. Accessed on 08/19/2024)..

Brief descriptions of the datasets selected should populate below the Variable X and Variable Y dropdowns.

VIEWING DATA ON MAPS



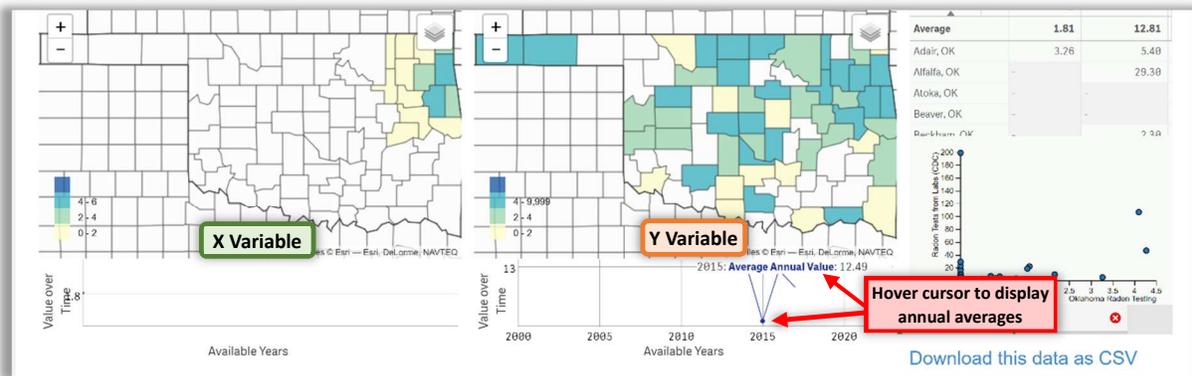
The data for the X and Y variables should populate into the maps at the county level on the left and right sides, respectively. Counties will appear white if they have no data from the year selected. *You’ll notice that data on radon is only available for some Oklahoma counties. The data is most complete in northeastern Oklahoma thanks to extensive testing by the Cherokee Nation.*

Zoom In/Out: The maps should automatically zoom to the area of interest once the variables and state are selected, or you can zoom manually clicking the +/- icon or scrolling with your mouse.

Change Basemap: Optionally, you can choose between 3 ESRI styles for the map underneath the data.

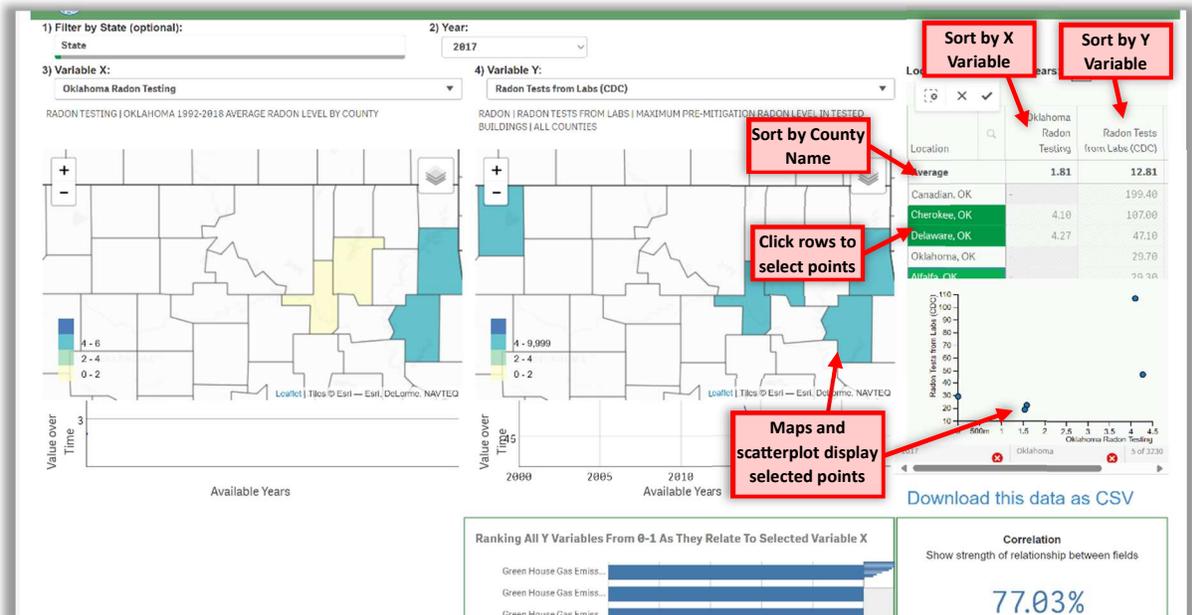
Highlight County: Try hovering over a county with your cursor; this will outline it in red on both maps, show its value for the selected variable, and highlight its corresponding data point on the scatter plot on the right side of the screen.

VIEWING THE “VALUE OVER TIME” GRAPH



The graphs below the maps show the years for which the X and Y datasets have available data. Hovering your cursor over these graphs shows the average value between all counties by year. *Note that since the “Oklahoma Radon Testing” variable is averaged over multiple years, it does not display here.*

USING THE DATA TABLE

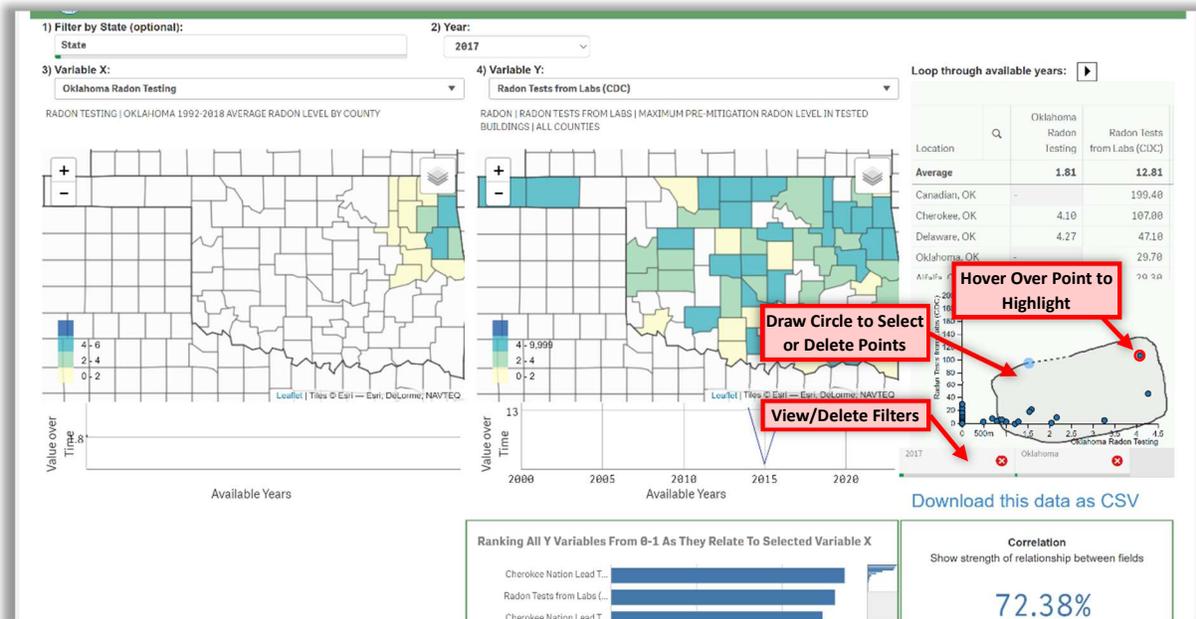


Select Individual Points: Try clicking on individual rows within the table; this allows you to narrow your search to individual data points. The graphs will appear gray when 1 or 2 points are

selected, but will function normally if 3 or more are selected. Click on the selected rows again to deselect them.

Sort by Column: Click the column headings once to sort by the county name, X variable, or Y variable. Click once to sort from the highest to lowest numerical value or from A-Z; click again to sort in the reverse order.

USING THE SCATTER PLOT

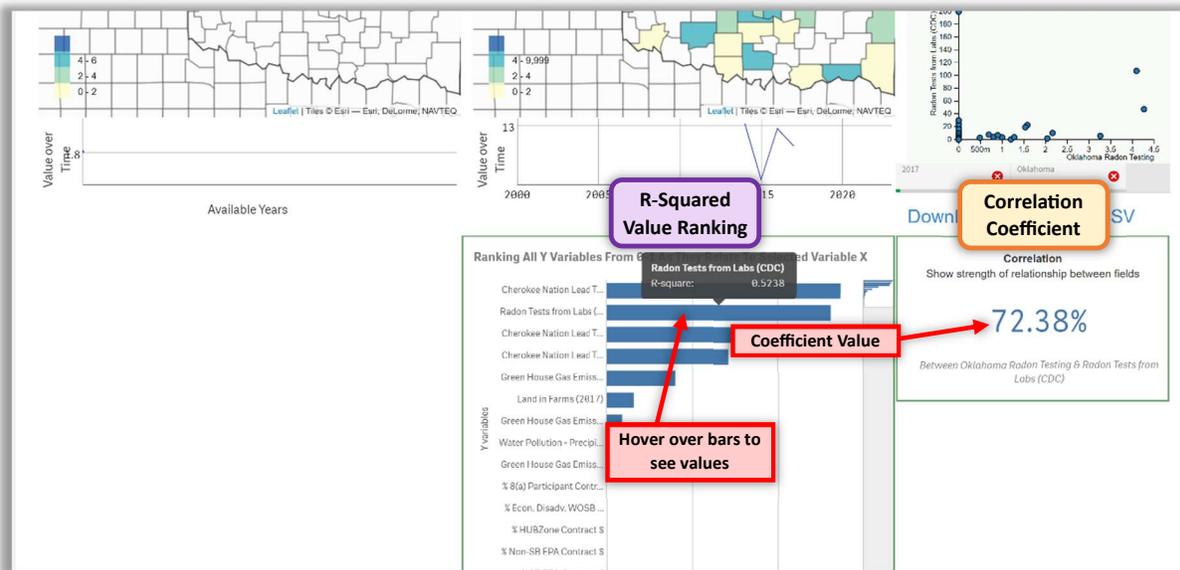


Highlight a Point: Hovering your cursor over an individual point will highlight it, show the county name and X and Y values, and outline the county in red on the maps. Hovering over a county on one of the maps will do this as well.

Circle Points to Select or Delete: You can draw a circle around a point or group of points in the scatter plot. Drawing a closed circle will select the points inside of it, and drawing an open shape will delete these points.

View/Remove Filters: The scatter plot shows all filters applied to the data, and you can remove these using the red "X" icons.

STRENGTH OF RELATIONSHIP CALCULATIONS



R-Squared Value Ranking: The bar graph ranks the variables with which the X variable has the highest R-squared values. Try hovering your cursor above the bars to see the exact values.

Correlation Coefficient: The correlation between the X and Y variables is displayed as a percentage at the bottom of the page. Values close to 100% indicate a strong positive relationship, values close to 0% indicate no relationship, and values close to -100% indicate a strong negative relationship.

Try switching the Y variable from “Radon Tests from Labs (CDC)” to “EPA Predicted Radon Zones”. You’ll notice that the correlation coefficient changes from 72.38% (a strong positive relationship) to -75.49% (a strong negative relationship). The CDC dataset was created more recently using data that include all valid test results for an address, while the [EPA Map of Radon Zones | US EPA](#) was developed in 1993 to identify areas of the U.S. with the potential for elevated indoor radon levels. The difference in correlation shows the importance of continued testing for Radon in buildings!

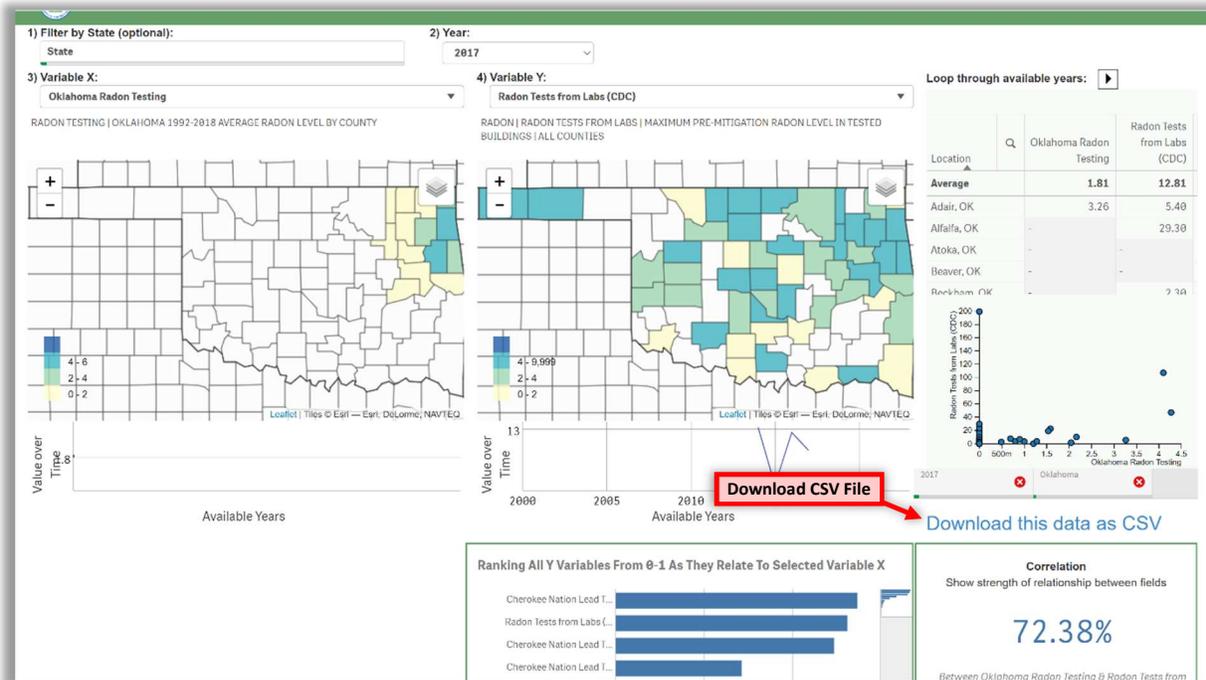
It should be mentioned that the Map of Radon Zones was developed using data on indoor radon measurements, geology, aerial radioactivity, soil parameters, and foundation types. The two datasets are not directly comparable for this reason.

Also note that CDC’s measured indoor air concentrations of radon are compared to the EPA action level of 4 picocuries per liter of air or pCi/L to determine if mitigation should be performed. EPA also suggests mitigation be considered if a test shows between 2 and 4 pCi/L (according to: <https://ephtracking.cdc.gov/DataExplorer>. Accessed on 08/19/2024). It is important to note more analysis is needed to understand if there are biases in the CDC data. It is

unclear which tests results are included in the data set or what triggers a test. It is not clear if the data include multiple tests from a single home. These data can change significantly over time as additional test results are included. These changes may reflect changes in who is testing, not actual changes in occurrence.

These data nuances demonstrate the importance of using the SAMIEHD app to visualize as much data and information that's available while using API connections to pull that information into the app. This is a new way to get important information to the fingertips of people like, community planners, regulators and the general public quickly and reliably every single time. We are still working on the app and adding more datasets. Over time, the app will become more and more useful as we are able to add more data, compare results, and look for correlations.

EXPORTING DATA



Download CSV: Once you've selected the data you're interested in, you can export it as a .CSV file.

Now that you've seen SAMIEHD-Visualization's features, try comparing and downloading datasets that you might use in your work! Please contact us by emailing senkayi.sala@epa.gov or clicking the "Contact Us" button at the bottom of the page if you have any questions or feedback.

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