

Studying Up on Epidemiology and Toxicology

What's correlation and causation?

- **Correlation:** when two factors (or variables) are related, but one does not necessarily cause the other.
- **Causation:** when one factor (or variable) causes another.

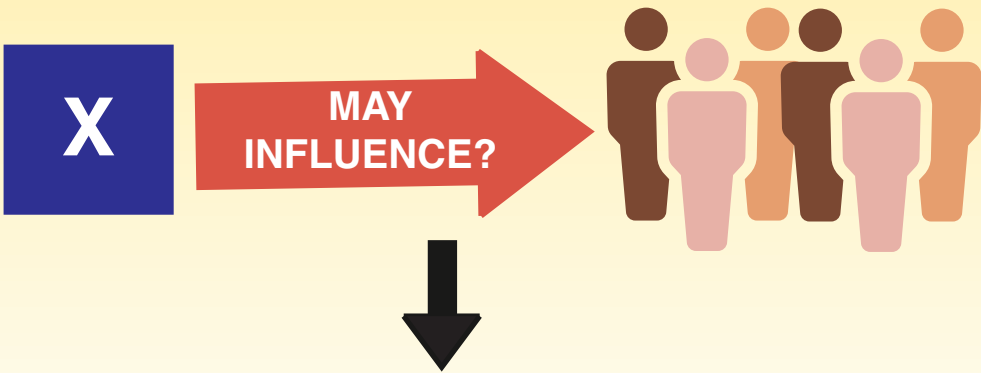


Epidemiology

Epidemiology looks at potential **correlations** between activities and health outcomes and disease in populations.



Individuals are viewed collectively and studies are conducted to evaluate correlation or causal relationship.



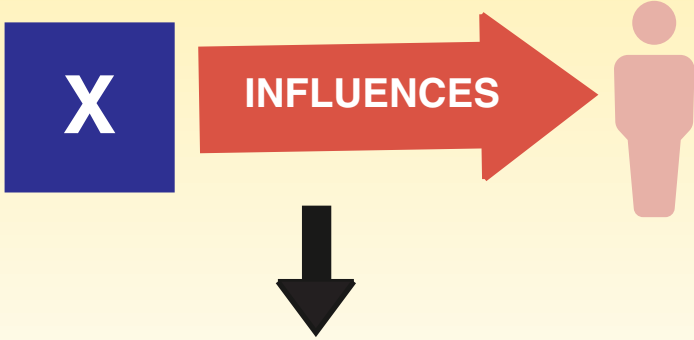
Epidemiologic studies may demonstrate **correlation**, but the inability to confirm an actual exposure makes causation difficult to prove.

Toxicology

Toxicology is the study of the **causation** chemicals, substances, or situations, can have on people, animals and the environment.



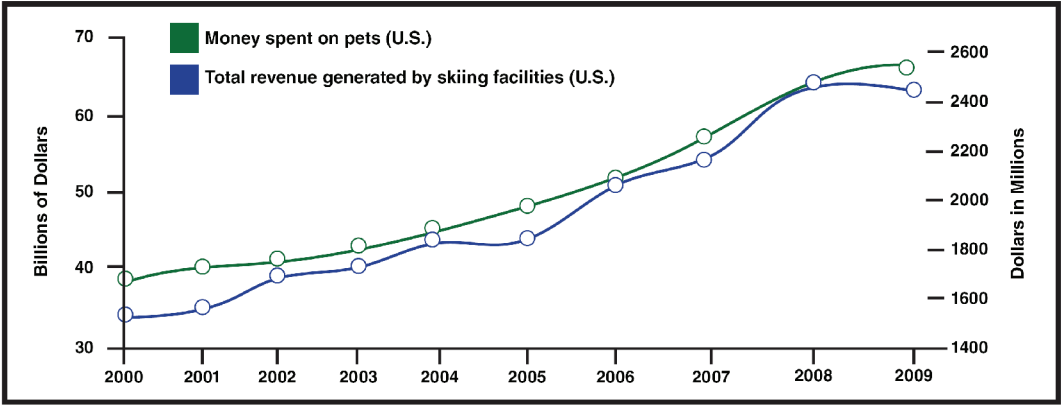
Controlled laboratory experiments determine the level of exposure to a chemical, substance or situation that might cause harm.



Toxicological studies have better controls in place to better determine **causation**.

Correlation Alone Does Not Prove Causation

For example, there is a strong but false correlation between the **money people spend on their pets** and **revenue generated by skiing facilities**.



Just because these two trends align - it doesn't prove they are meaningfully related to one another.

