# Epi-*What*?
# Demystifying Epidemiology

You've heard it said; what does it mean?

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Skagit County
Board of Health, April 27, 2021

# What it Seems Like I Do…

**Epidemiologist** (n): Someone who solves problems you didn't know you had in ways you don't understand.
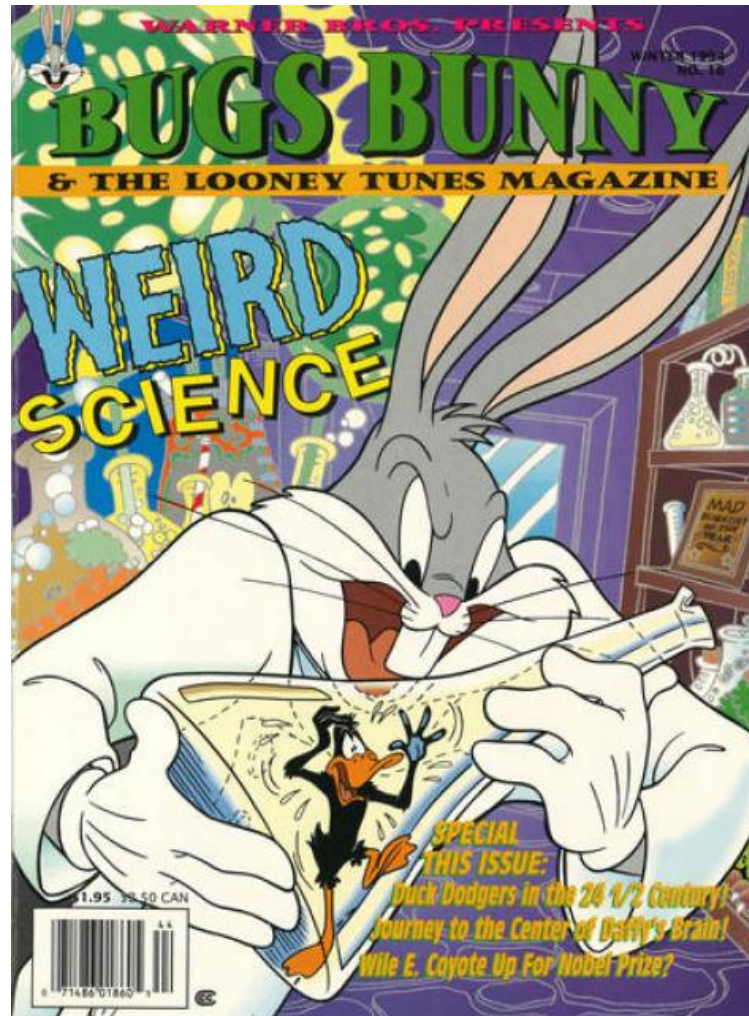
Also see: magician, wizard

# The "Official" Definition

Epidemiology is the **study** of the **distribution** and **determinants** of **health-related states or events** in **specified populations**, and the **application** of this study to the control of health problems.

But that's not a whole lot clearer, is it?

# The Science of Public Health

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Data is only as good as the questions you ask

One part of it!

# The "Official" Definition

Epidemiology is the **study** of the **distribution** and **determinants** of **health-related states or events** in **specified populations**, and the **application** of this study to the control of health problems.

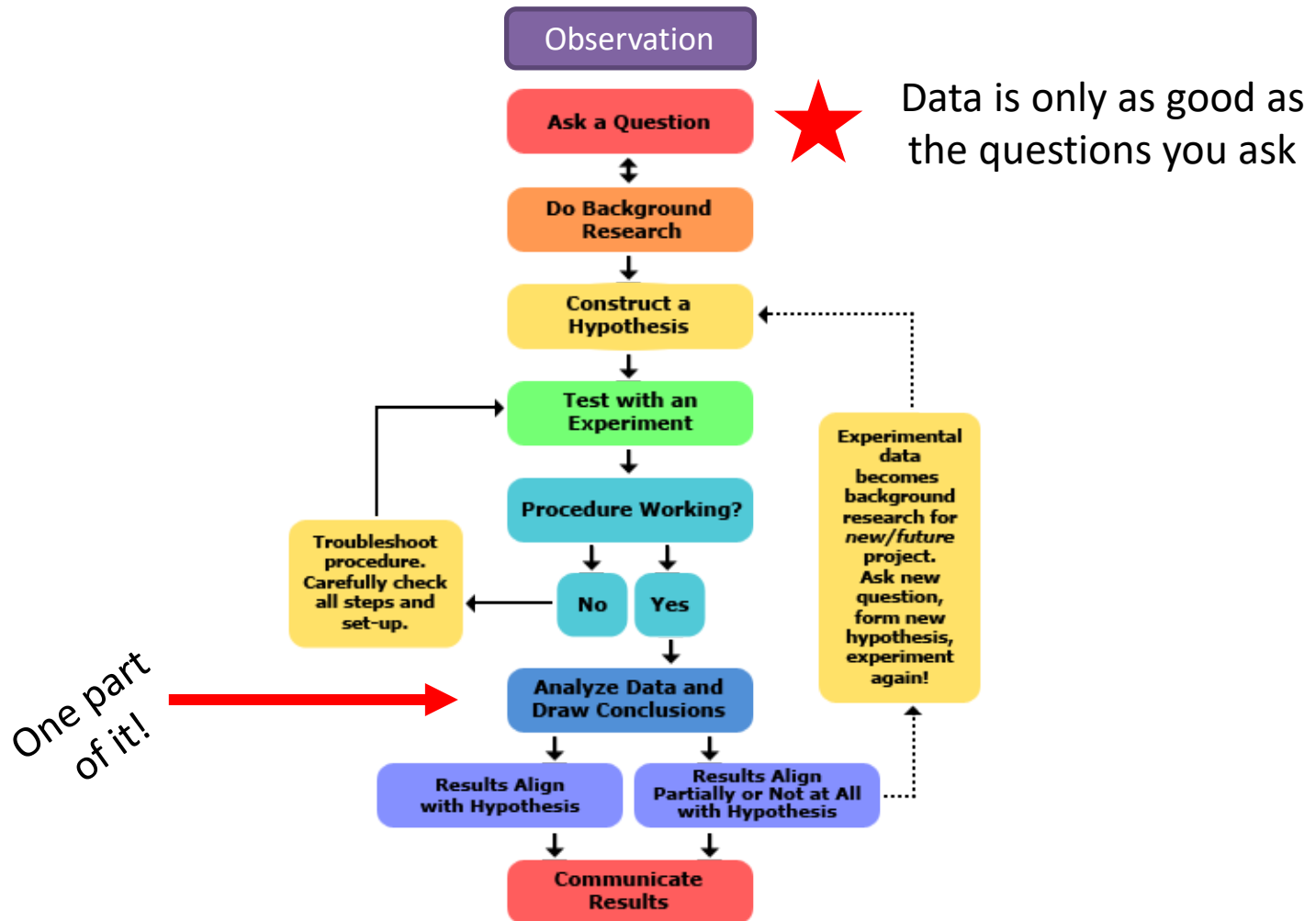# At the Root of It

Epidemiology uses scientific methods to answer…

What is happening?
Who gets sick? When?
Where?

Descriptive
Epidemiology
(distribution)

What puts them **at risk** for getting sick?

What **prevents** them from getting sick?

Analytic
Epidemiology
(determinants)

# Other Ways to Ask Epi Questions

- What are the actual and potential health problems in the community?

- Where are they occurring?

- Which populations are at increased risk?

- Which problems have declined over time?

- Which ones are increasing or have the potential to increase?

- How do these patterns relate to the level and distribution of public health services available?

# Key Principles

**Why** are we collecting this information?
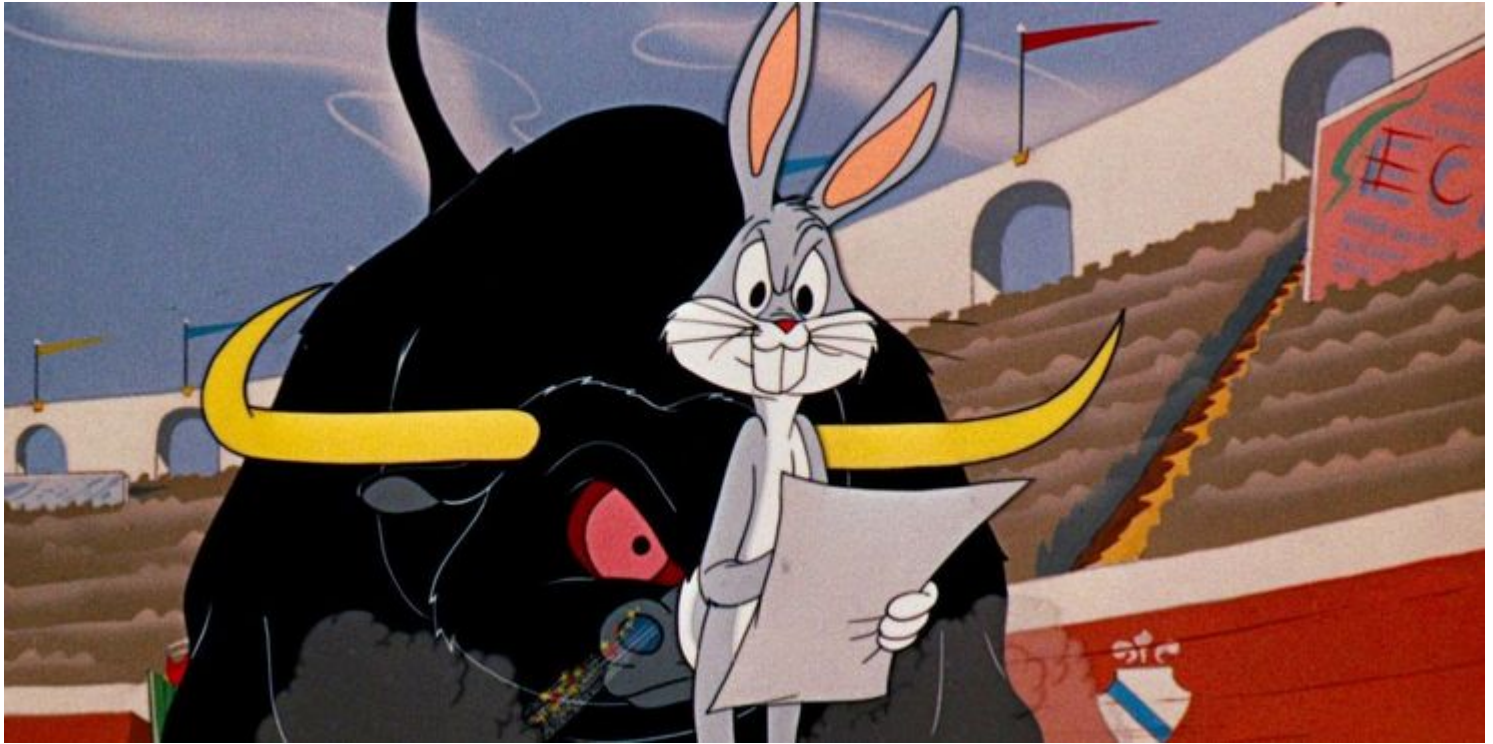
**What** will we **do** with this information?

**What** *specific* **question** do we want to answer?

**Who** are we going to present with this information?

Else risk the rabbit hole…

# We Will Need to Prioritize

# Epidemiology Project Request Form

*For internal use*

**Requestor:** Click here to enter text.    **Division(s):** Click here to enter text.

**Project Name:** Click here to enter text.    **Today's Date:** Click here to enter text.

**Phone:** Click here to enter text.    **Email:** Click here to enter text.

## PROJECT INFORMATION

**Define your population of interest:**

Click here to enter text.

*Are you interested in mothers who smoke versus mothers who don't? How about seniors in Concrete? Include any data you have about size of population. Ex: Low-income adults, 15-24 year old women, individuals experiencing homelessness, etc.*

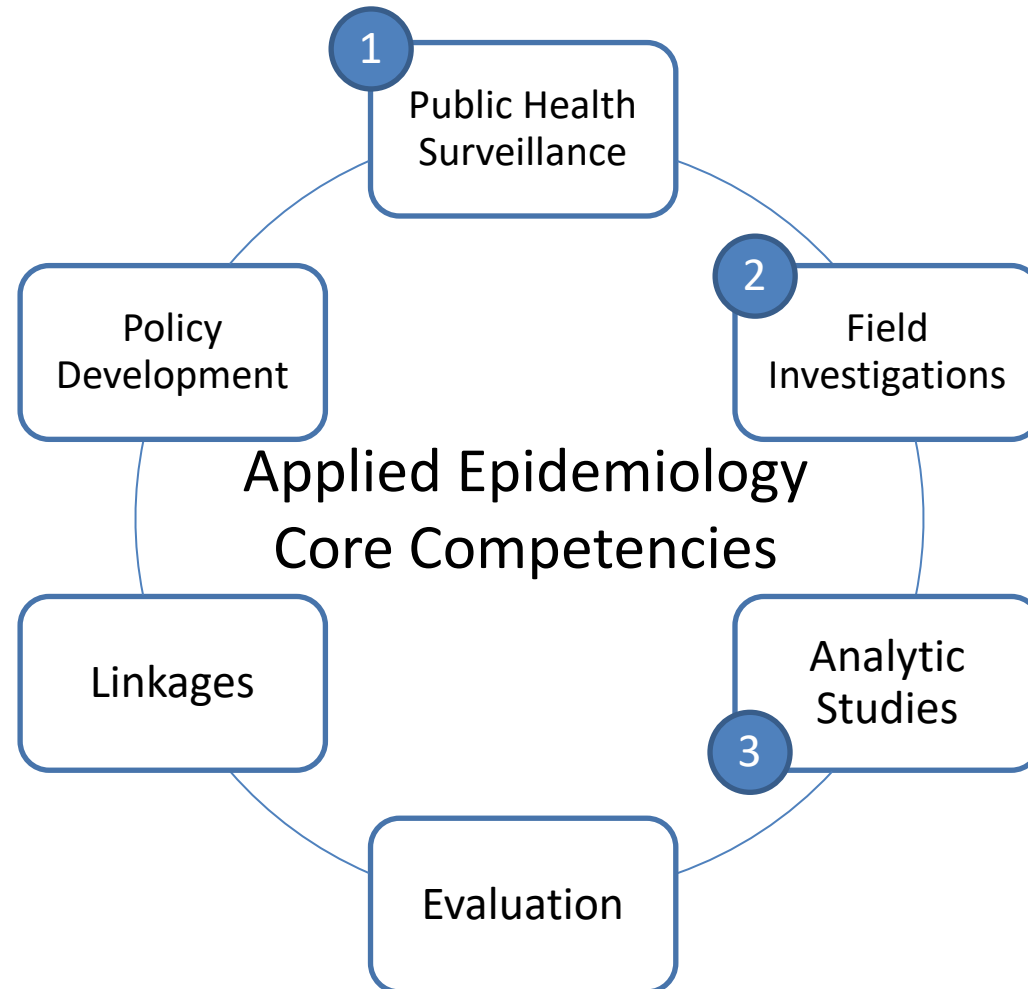**What do you want to know?**

Click here to enter text.

*List as many questions as needed. Good questions can be answered, refer to a problem or issue, and are as specific as possible. Ex: Where do low-income seniors in Skagit County get information about diet and exercise? Or how does prevention outreach to urgent care providers impact STD rates in those clinics?*

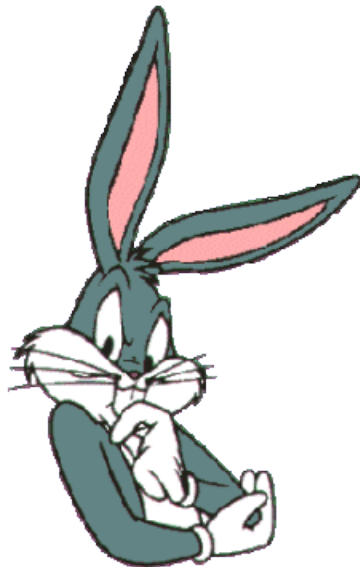**Why do you want to know this?**

Click here to enter text.

*Ex: "We are unaware of program participant knowledge and skills. We want to increase senior participation in*

# How do we get the information to answer these questions?

# Surveillance

The **continuous**, **systematic collection**, **analysis** and **interpretation** of health-related data needed for the **planning**, **implementation**, and **evaluation** of public health practice.

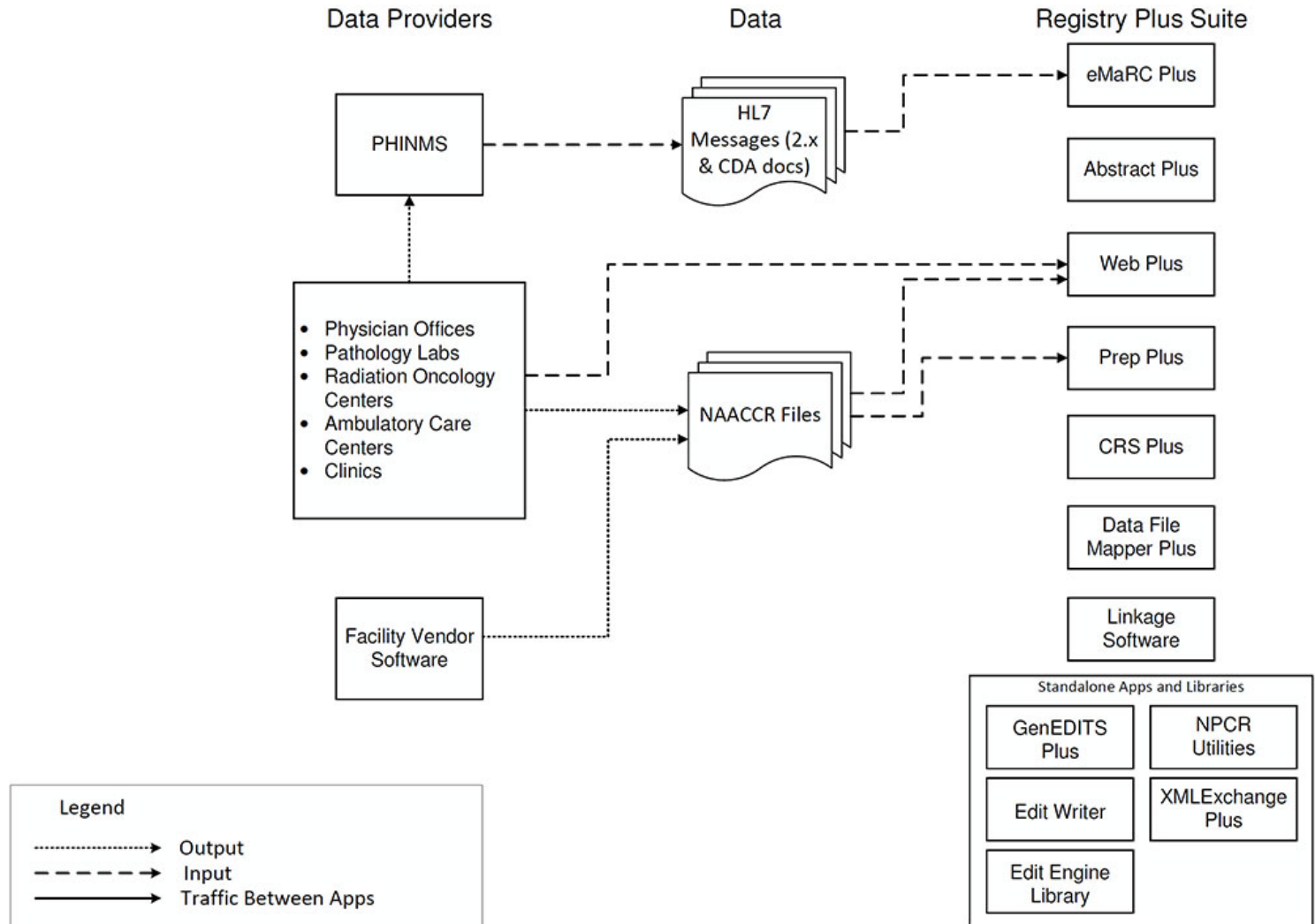*Question: What do we collect continuously and systematically?*

# Surveillance Data Sources

- Behavioral Risk Factor Surveillance System
- Healthy Youth Survey
- The First Steps database
- Washington Disease Reporting System (WDRS)
- Homeless coordinated entry system
- Restaurant inspections

# Data Flow

**Washington State Department of Health**

# Washington Tracking Network (WTN)
## A Source for Environmental Public Health Data

Home

Version Mai

Information By
Location (IBL)

## Selection Criteria

View two measures together ☐ ?

### Measure 1

**Keyword Search**

Search measures

Section

Select a section ▼

Topics

Select a topic ▼

Sub Topic

Select a sub topic ▼

Measure

Select a measure ▼

**Filters**

Geography

Select a geography ▼

Submit

Selection Criteria & Filters

Notes

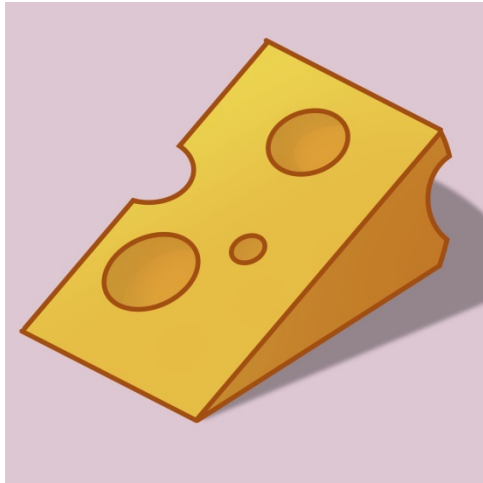https://fortress.wa.gov/doh/wtn/WTNPortal/

### Measure 1

**Getting Started**

- You can search for data using the "keyword search" box on the left.
- Narrow your search using the drop-down selections.
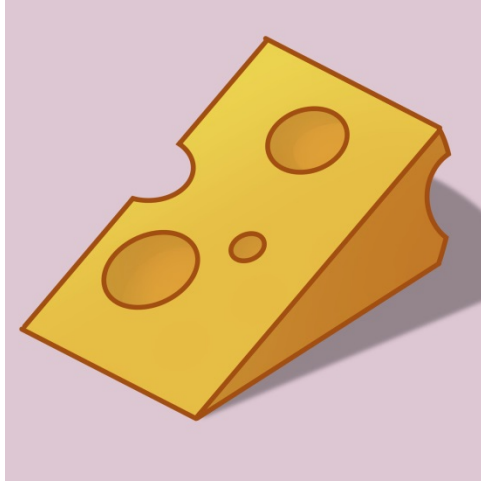- Or, select from the topics below then hit the submit button.

**Data Available on WTN**

- **Climate and Health**
  - Environment (air stagnation, drought, flood risk, natural hazards, snow pack, urban heat, weather extremes, wildfires)
  - Carbon Sources (commute to work, electricity use)

- **Community**
  - Community Characteristics
    - Economic (children living in poverty, HUD unaffordable housing and transportation, income spent on housing, income spent on transportation, populations living in poverty, poverty, unaffordable housing, unaffordable transportation and unemployed)
    - Education (college, no high school diploma, some college)
    - Emergency preparedness and response
    - Housing (housing with 10+units, mobile homes, overcrowded housing)
    - Languages (limited English, limited English proficiency (LEP) - counts and percentages, student data for LEP)
    - Neighborhood Characteristics (alcohol outlet density, health professional shortage areas, limited access to healthy food, low voting rates, park access, poor land use mix, unoccupied housing)
  - Population (median household income, migrant farm labor, population, no access to a private vehicle, people of color, population 18 to 65 with no health insurance, population 65+ living alone, population under 5 years old, population with a disability, race, single parent household)
  - Transportation (transportation safety, transportation to work)
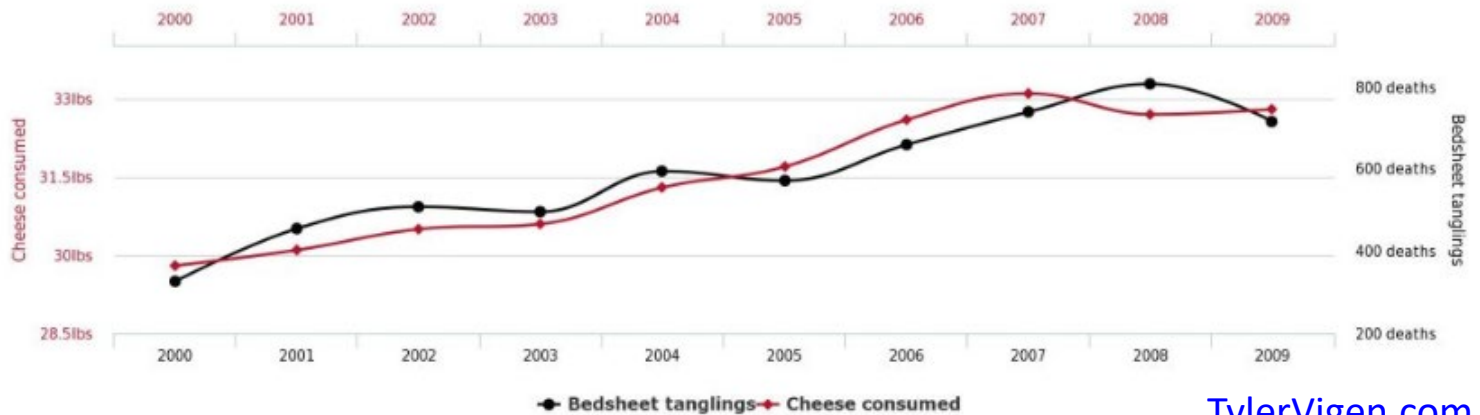
# Beware Spurious Correlation

# Beware Spurious Correlation



TylerVigen.com

*Washington State Department of*
# Health

Topics A-Z | Español | ENHANCED BY Google

| You and Your Family | Community and Environment | Licenses, Permits and Certificates | Data and Statistical Reports | Emergencies | For Public Health and Healthcare Providers |

ⓘ For more information about the 2019 Novel Coronavirus situation, please visit our **COVID-19 page**.

# Data and Statistical Reports

https://www.doh.wa.gov/DataandStatisticalReports

**Data Topics A-Z**

**Data Guidelines**

**Data Systems**
- Behavioral Risk Factor Surveillance System (BRFSS)
- CHAT
- Healthy Youth Survey

**Diseases and Chronic Conditions**
- Cancer Data
- Communicable Disease Surveillance Data
- Influenza Surveillance Data
- West Nile Virus

**Environmental Health**
- Drinking Water System Data
- Pesticides
- Site Assessments
- Zoonotic Diseases

**Health Behaviors**
- Health of Washington State Report
- Immunization Information System
- Pregnancy Risk Assessment Monitoring System
- Tobacco

**Health Statistics**
- Birth
- Death
- Divorce

**Healthcare in Washington**
- Adverse Events
- Hospital Discharge Data (CHARS)
- Hospital Financial Data

**Injury Violence and Poisoning**
- Injury Data
- Trauma Registry

**Maternal and Child Health**
- Children with Special Health Care Needs
- Family Planning Client Data Sheets
- Maternal and Child Health Data Reports
- WIC

**State Health Assessment**

# County Level Data Online

## About this Publication

This document was developed to help individuals access internet resources that provide reliable 'county' level data. Data sources that do not include information at this level of geography (county or smaller) are not included.

Resources in this document are reviewed bi-annually with new data reports and webpages added as they become available.

▸ For additional copies of this document or to obtain the most up-to-date version visit:
www.co.thurston.wa.us/health/admin/data/datapublications.html

| Local Community Reports | Page 2 |
| --- | --- |
| **By Topic:** | |
| Crime | Page 2-3 |
| Economics and Employment | Page 3-5 |
| Education | Page 5-7 |
| Health | Page 7-13 |
| Housing and Homelessness | Page 13-14 |
| Population and Demographics | Page 14-15 |
| Poverty and Income | Page 16 |
| Substance Use | Page 17 |
| Transportation and Traffic | Page 17-18 |

**Includes 95 different data sources**

~1~

County Level Data Online, Updated June 2017
Thurston County Public Health & Social Services Department

https://www.co.thurston.wa.us/health/admin/data/docs/onlinedatasourcesJune2017.pdf
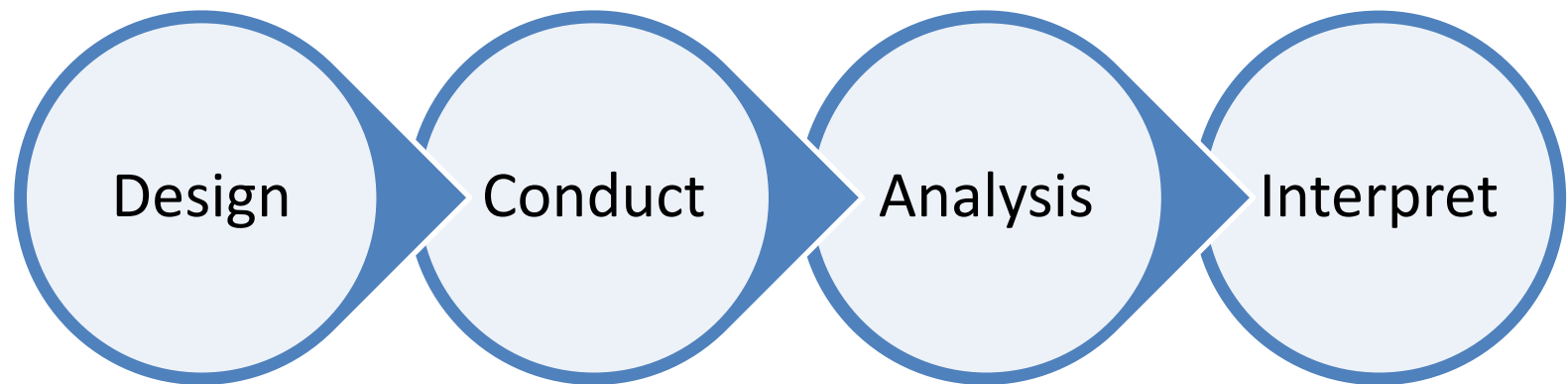
# Field Epidemiology

Finding cases, interviewing patients, getting more information, applying knowledge of biology/ecology/sociology to figure things out

# Analytic Studies ("Experimentation")

The planned, systematic **collection**, **analysis** and **interpretation** of health-related data to **answer a question** or **test a hypothesis**.

Might entail implementation of an actual **intervention**.

Design → Conduct → Analysis → Interpret

# Timelines for Projects

**Surveillance projects**: days – years

**Field epidemiology**: days - months - years

**Analytic projects**: months - years

# Being Good Stewards

# We Must be Good Stewards

**Department of Health Agency Standards for Reporting Data with Small Numbers**

**Revision Date: May 2018**
**Primary Contact: Cathy Wasserman, PhD, MPH, State Epidemiologist for Non-Infectious Conditions**
**Secondary Contact: Eric Ossiander, PhD**

Purpose

What is new, and how does this affect public health assessment?

Scope of the "Standards for Working with Small Numbers"

Summary

    Small Number Standard

    Reliability Recommendation

Summary Graphic

Background

    Why are small numbers a concern in public health assessment?

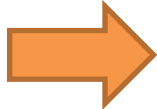    What constitutes a breach of confidentiality?

    Why do we question the stability of statistics based on small numbers?

Why do we have a new standard?

Working with Small Numbers

    General Considerations

    Assessing Confidentiality Issues

https://www.doh.wa.gov/portals/1/documents/1500/smallnumbers.pdf

# Data *Requires* Context

Data without context is uninformative at best and misleading at worst.

– Someone

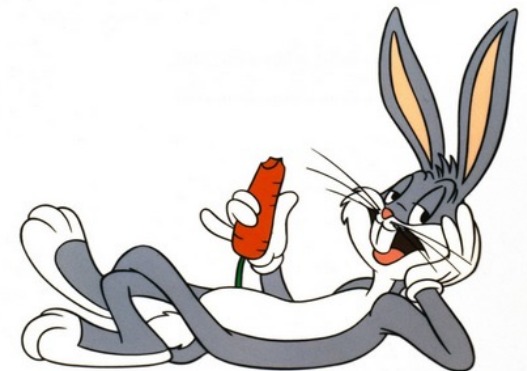All models are wrong, but some are useful.

— George E. P. Box —

AZ QUOTES

Similarly…
Data are imperfect,
but some are useful.

# We Must be Good Stewards

The public's trust is at stake. These days, public trust in statistics isn't strong*. Our own skepticism in this process is a *great* trait.

*"Do not put your faith in what statistics say until you have carefully considered what they do not say."*

-William W. Watt

*Unsubstantiated opinion

"That's all Folks!"