

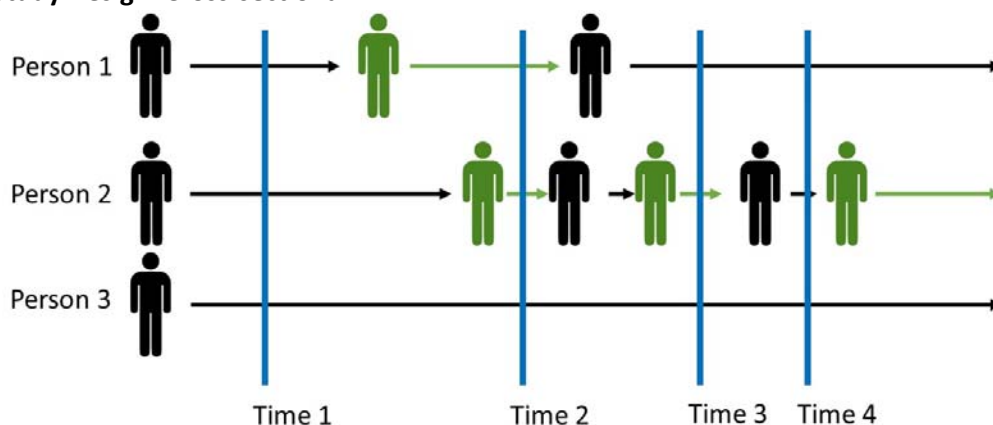
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EPIDEMIOLOGIC TOOLBOX

The Epidemiological Toolbox

- **Scenario 1**
 - A chemical company delivering neonicotinoids, a common insecticide, to the Smith's farm overturned and spilled an estimated 200kg. The family has come to you and after examination you find nothing alarming. Intrigued, you consult the MSDS for the chemical and find the product is not teratogenic in mice, and is safe at suggested concentrations, but can have adverse effects on the livers of mice in high doses.
- **Scenario 2**
 - About 15 years after the chemical spill on the Smith's farm, Doug Smith develops an aggressive liver tumour. Several of his children have since moved away and are in their early to late 30's. You are concerned that this development may have something to do with the chemical spill, but aren't entirely sure.
- **Scenario 3**
 - Many of the elderly patients in your clinic have had joint replacement surgeries. You think you can accurately predict/guess which patients are likely to have an easier recovery or require less care after their surgery.
- **Scenario 4**
 - You and your staff implemented a coordinated home visit for first time mothers shortly after delivery, spearheaded by the nursing staff. While anecdotal conversations suggest these visits are useful, you're not sure if this resource intensive program is having significant results.
- **Scenario 5**
 - In the past week, 5 members of the same family have come to your clinic complaining of diarrhea, muscle cramps and nausea. You think this may have to do with a family get together they all attended on the weekend.
- **Scenario 6**
 - A recent report by Agriculture Canada outlines heavy metal concentrations in soil by municipality. After looking at this data you find that your region has higher levels of cadmium than surrounding municipalities. Knowing that cadmium primarily affects the kidney, you think that blood samples showing decreased creatinine clearance have been more common in recent years.
- **Study Design: Cross-sectional**



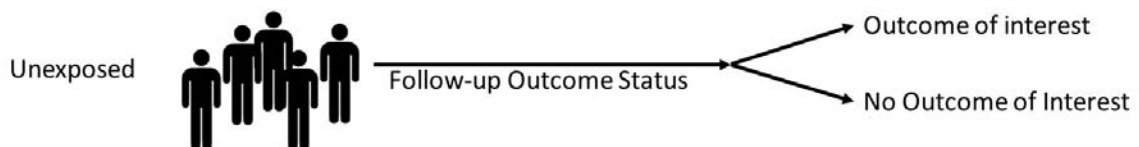
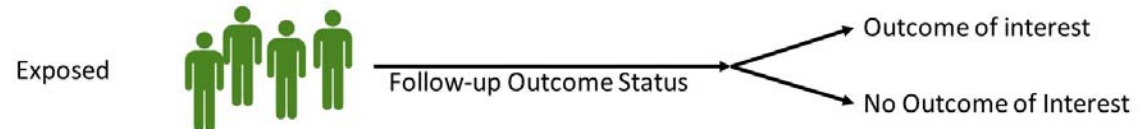
- A “vertical slice” or “snapshot” of data
- Aggregate data from a specific point in time
- **Pros:** Easy, cost effective
- **Cons:** No temporal relationship
- **Potential Bias:** Aggregate data
- **Best use:** Early, exploratory analysis

- **Study Design: Case control**



- Outcome of interest is defined
- Outcome status known; exposure status unknown
- **Pros:** Relatively inexpensive, efficient
- **Cons:** Participant recall (bias)
- **Best use:** Rare diseases

- **Study Design: Cohort/longitudinal**



- Define exposure of interest
- Exposure status known; outcome status unknown
- **Pros:** Temporal relationship established, multiple outcomes can be studied
- **Cons:** Latency, expense, follow-up, sample size
- **Best use:** Rare exposures

- **Methodology: Qualitative**

- Interviews to document motivations/feelings/perceptions
- 1 on 1 to focus groups
- “Code” responses for emergent themes
- **Pros:** Rich contextual data, open ended
- **Cons:** Data analysis, consistency