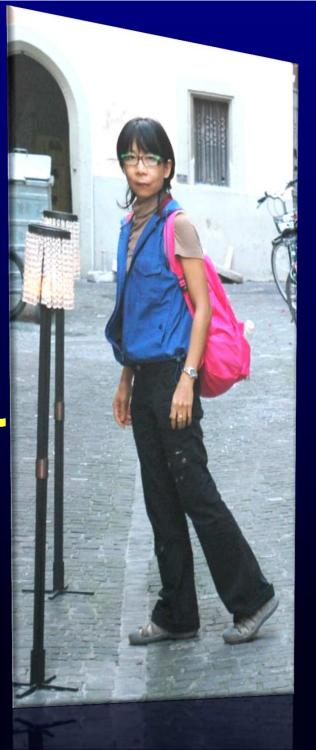
Ecology Study

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Characteristics

- Defining unit of observation as population or community
- Measuring disease rates and exposures in each of a series of populations
- Determining associations between the occurrence of disease and exposure

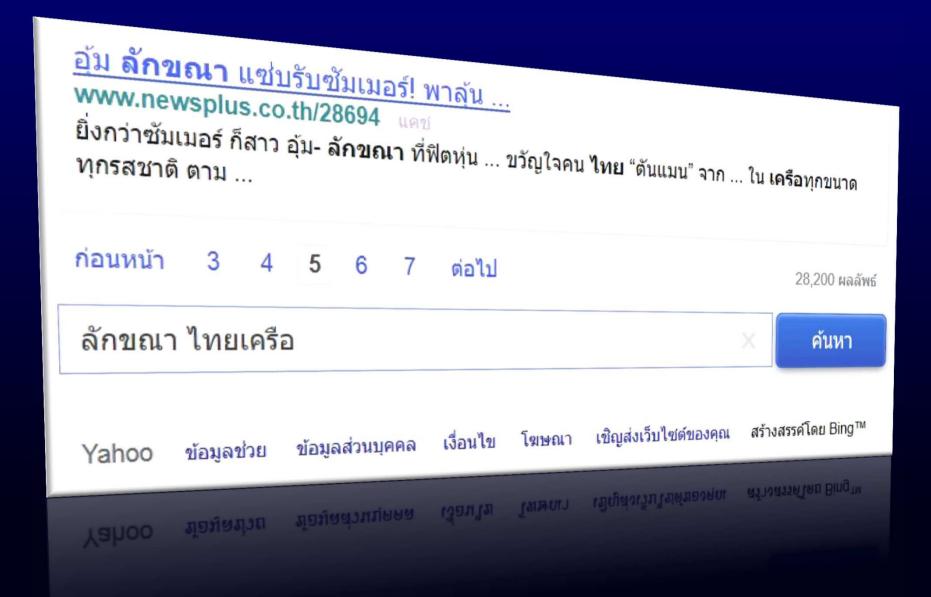
Characteristics

- Defining unit of observation
 - population or community, or
 - same geographically defined population at different point in time
- Measuring disease rates and exposures in each of a series of populations
- Determining associations between the occurrence of disease and exposure
- Other name: correlational study

Study of migrant populations

- Discriminating genetic from environmental causes of geographical variation in disease
- Migrants may be unrepresentative of the population that they leave
- Process of migration may affect their health

Analysis



The populations comparisons:

1. Geographic

correlations between disease incidence/ mortality and the prevalence of risk factors

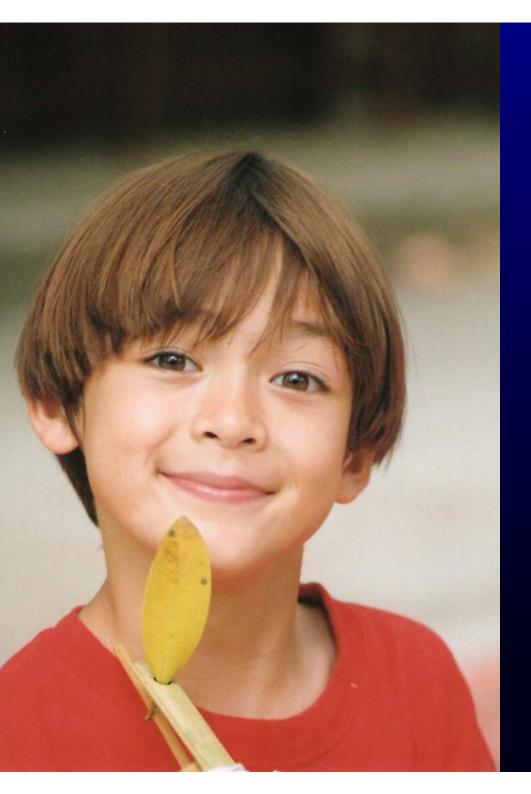
- Confounding: age and sex
- Bias: different disease/exposure ascertainment by geographical areas

Analysis (Cont.)

2. Time trends

Time/secular trends in disease incidence correlate with changes in a community's environment/way of life

- Bias: different disease/exposure ascertainment by time
- Validating secular changes is more difficult



A statistically significant association between exposure and outcome in population unit does not guarantee causal relationship in individual level

Ecological Fallacy (Aggregation bias)

Association observed between variables on an aggregation level DOSE NOT guarantee existing of an association at an individual level

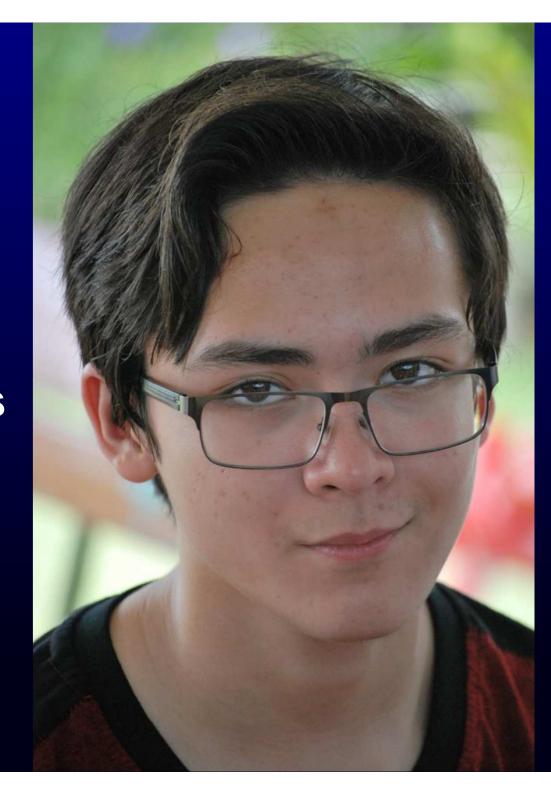


Is ecological study a preliminary study?

- Not always true
- More accurate conclusion in these situations
 - Within-population variability of Exposure is low, but the between-population variability is high
 - Intervention implementation is at the population level

Advantage

- Feasible in practice
- Less time consuming
- Create new hypothesis
- Less ethical conflict





Disadvantage

- Secondary data validity
- Missing data
- Temporal ambiguity
- Population level VS individual level

Thank You

