

The Epidemiological Ladder

When choosing a study design the signs are not always clear regarding which direction to go. Each option has strengths and weaknesses to be considered. Understanding the main differences between the designs is a first step in the right direction. The CRICH Survey Research Unit has developed a new reference table to help you understand these differences: The Epidemiological Ladder.

DESIGN CHARACTERISTICS	STUDY DESIGNS					
	DESCRIPTIVE EPIDEMIOLOGY		ANALYTIC EPIDEMIOLOGY			
			OBSERVATIONAL			EXPERIMENTAL
	CASE REPORT/SERIES	CROSS SECTIONAL	CASE CONTROL	RETROSPECTIVE COHORT	PROSPECTIVE COHORT	RANDOMIZED CONTROLLED TRIAL
Describes outcomes and/or exposures	Yes	Yes	Yes	Yes	Yes	Yes
Tests a hypothesis	No	Sometimes	Yes	Yes	Yes	Yes
Samples by outcome	n/a	No	Yes	No	No	No
Samples by or assigns to exposure	n/a	n/a	No	Yes	Yes	Yes
Follows the development of new outcomes	n/a	n/a	No	No	Yes	Yes
Randomly assigns the exposure	n/a	n/a	No	No	No	Yes
Alternative study names	n/a	Prevalence study, Disease frequency survey	Retrospective design; backwards design; case referent; case comparison	Historical prospective; non concurrent cohort; non concurrent prospective , retrospective chart review	Follow-up study; prospective study; longitudinal; concurrent; incident; panel	Experimental cohort; randomized comparative trial; intervention trials
Description	Describes the characteristics of a case or a series of outcomes and/or exposures.	Investigates the relationship between outcome and exposure at a particular point in time.	Compares a group with known outcome and suitable group without outcome to understand the relationship between this outcome and past/current exposure.	Collects/review retrospective data to compare a group with known exposure and suitable unexposed group to understand the relationship between exposure and outcome.	Prospectively follows a group with known exposure and suitable unexposed group to investigate the relationship between exposure and outcome.	Randomly allocates participants/units into exposed and unexposed groups and prospectively follows these groups to investigate the relationship between exposure and outcome.
Main design variations	n/a	Ecological design - the unit of analysis, instead of individuals, is the entire population or groups of people Cross over design - subjects serve as their own control and contribute data to both exposed and unexposed groups				

Examples from studies managed by the CRICH Survey Research Unit

Neighbourhood Effects on Health and Well-being (NEHW)

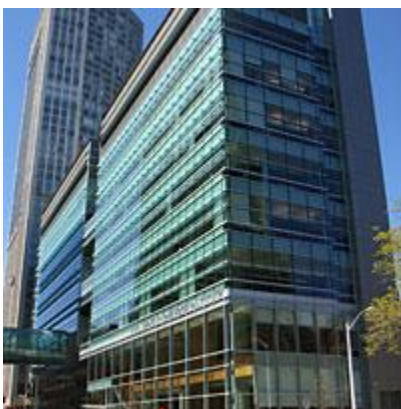
Principal investigators: Patricia O'Campo and Blair Wheaton
A **cross sectional** design where study participants were randomly selected based on census tracts. Exposure and outcome measures were collected via in-person structured interviews at a single point in time. For more information about this project visit:
www.stmichaelshospital.com/crich/projects/nehw

Toronto Social Housing and Health

Principal investigator: James Dunn
A **prospective cohort design** where participants receiving a housing intervention (exposure) and suitable unexposed participants are being followed to compare changes in outcomes over time. For more information about this project visit:
www.stmichaelshospital.com/crich/projects/socialhousinghealth

A Randomized Controlled Trial of Housing First for Homeless People with Mental Health Illness: Long-Term Outcomes (At Home Study)

Principal investigators: Stephen Hwang, Patricia O'Campo, Vicky Stergiopoulos
A **randomized controlled trial** where participants were randomly assigned into a housing intervention treatment group or a treatment as usual group. Both groups were interviewed at baseline and at fixed intervals after the intervention. This project is on-going.
For more information about this project visit:
www.stmichaelshospital.com/crich/projects/at-home



CRICH Survey Research Unit,
Keenan Research Centre
Li Ka Shing Knowledge Institute
St. Michael's Hospital



Remember: It is also important to take into consideration non-methodological aspects, such as: ethical and privacy considerations, budget and time constraints, data collection and analysis capacity, and the available sampling frame, among others.

The **Epidemiological Ladder** is a work in progress. If you have any comments or suggestions please email SRU@smh.ca.

CRICH Survey Research Unit – Providing high quality and efficient research services to the health and social sciences research community

We can help you determine the types of services that are right for your project. Contact us for data collection options, rates and availability.

Contact information:

<http://sru.crich.ca>
SRU@smh.ca



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CRICH
Centre for Research on Inner City Health
Survey Research Unit