

# Research Problem

BUS 230: Business Research and Communication

## 1

### 1.1 Goals and Learning Objectives

#### Goals and Learning Objectives

- Goals of this chapter:
  - Learn how variables are used to answer a research question.
  - Learn the fundamental characteristics of a research proposal.
- Learning objective: LO1: Develop the ability to define a research problem. Formulate research questions and hypotheses that are measurable, well-defined, address the overall problem, are directly related, and reflect the scope of the problem.

## 2 Variables used in Research

### 2.1 Types of Variables

#### Variables in the Research

- **Unit of analysis:** that which defines a single observation from your population, from which you can draw measures of one or more variables.
- **Variable:** A measure of a very specific attribute from an observation in your population. The value this attribute takes should differ among at least some of the observations in your sample and population.
- **Continuous variable:** A variable whose measurement is taken on a scale without breaks, and which any fractional measure is allowed.
- **Categorical variable:** A variable whose value defines membership of one of two or more groups.

## Examples

- Research question: “What impact does living on campus have on academic performance?”
  - Unit of analysis: single UW-L college student.
  - Continuous variable: GPA (Scale 0.0-4.0)
  - Categorical variables: housing situation (on or off), gender, college (CLS, CBA, SAL)
- Research question: “What impact does state revenue have on public education expenditures?”
  - Unit of analysis: A single U.S. state.
  - Continuous variables: Tax revenue, public education expenditure (each measured in dollars)
  - Categorical variable: Region (Northeast, Southeast, Southwest, Midwest, Northwest)

## 2.2 Dependent versus Independent Variables

### Dependent and Independent Variables

- **Dependent variable:** variable that depends on, is explained by, or can be predicted by other variables.
- **Independent variables, aka explanatory variables:** one or more variables that explain or influence a dependent variable.
- Example: “What impact does living on campus have on academic performance?”
  - Dependent variable: Cumulative GPA
  - Explanatory variables: housing situation, parent’s income, gender.
- Example: “What impact does state revenue have on public education expenditures?”
  - Dependent variable: Public education expenditures
  - Explanatory variables: tax revenue, region, political party in power, percentage of population that is school-age.

## 3 Research Proposal

### 3.1 Parts of a Research Proposal

#### Research Proposal

- **Research proposal:** written statement of what the research project will entail.
  - Often written to gain permission, or ask for funding, to conduct the research.
  - This is *not* just an introduction of your research paper.
  - With any research project, the research proposal should be short.
- Parts of a Research Proposal
  - Short introduction: background of the situation, describe what is known and unknown about the topic, and why more research is required.
  - Purpose of the research.
  - Research design.
  - Outcomes.

### 3.2 Purpose of the Research

#### Purpose of the Research

- Should immediately include the these statement / research question.
- Go into more detail about what questions will be answered.
  - Are you going to investigate the significance of multiple causes towards some effect?
  - Are you going to investigate the importance of multiple possible symptoms of a problem?
  - Are you going to investigate multiple possible solutions to a problem?

### 3.3 Research Design

#### Research Design

- **Research Design:** description of what will be done to answer the question.
- This likely resembles the methodology section of the final research project.
- Includes:

- Description of the population.
- How the sample will be collected.
- What variables will be collected (what survey questions are used)
- What relationships among the variables will be investigated.
- What controls will be used.
- What statistical analysis will be conducted.

### 3.4 Outcomes

#### Outcomes

- What will be learned from this research project?
  - Be specific. Do not be overly optimistic about a general result.
- What decisions *can be informed* by your results?
- How will you disseminate your results?
  - Paper, report, presentation?
  - Who will your audience be?
  - When should dissemination be expected?