

# Week 1: Materials

## Week 1

### Introduction to the Course



## **Course Introduction: Motivation & Fundamentals**

Laerd "Creating a New File", "Data Setup", "Types of Variable"

- Introduction to course goals
- Discussion of basic terms for course, including statistics, data, research, element, sample, population, variable
- Focus on why the subject of statistical research is so important for society today

## Overview

This week we explore the foundational rationale for this course.

## Key Concepts

### Statistics: Why?

#### Definition and goal of statistics

#### Four distinctive uses of statistics

1. Descriptive
2. Inferential
3. Significance
4. Prediction

#### More terminology

- Element
- Sample
- Population
- Variable

#### General Sampling Issues

- Randomness
- Sample Size

### Specific Problems in Sampling

- Unknown population
- Known population that can't be sampled
- Population too small for sampling
- Sampling bias

### Use of Statistics in Context of Samples

- Inferential Applications
- Descriptive Applications

### Discussion on Honest Statistics

### Scales of Measurement

- Nominal
- Ordinal
- Interval
- Ratio

### Conversion Between Scales

### Geographical Data Cube

## Introduction

- Geographic research is inherently diverse, which in turn means that *researchers across geography need a broad tool kit* to address the range of problems to be solved.
- Another key point: geographic research can be done poorly. If this happens, this bad research reflects poorly on all geographers. *Geographers need to be properly educated* to avoid this.
- Given the above, *everyone in the geography community needs to understand the basic types of questions* that can be addressed through statistical analysis, and the range of *statistical options that we can draw on* that match the issues geographers commonly encounter.

# Resources for Personal Reflection

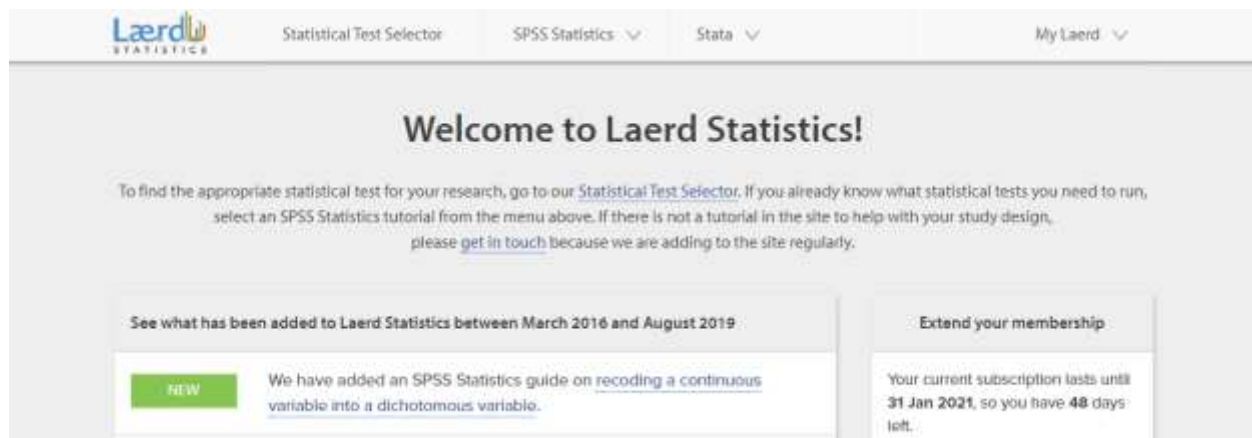
Now, let's dig into our subject matter. Below is our primary course website resource:

<https://statistics.laerd.com/> (Links to an external site.)

We will discuss this subscription-based resource in class, but if you take a quick look I think you will be pleasantly surprised by the quality of this resource and the cost of the subscription. Our readings from Laerd this week include:

- "Creating a New File"
- "Data Setup"
- "Types of Variable"

You may need to dig around the Laerd site a bit to find these, but I promise you, they are there and they are helpful reads (especially if these topics appear to be at all new to you). But to get you started, here's one bit of guidance: once you have logged in, you will land at a screen looking like the below. Pretty much everything we will read from this site in this course comes from the SPSS Statistics section, that you can access from the link in the middle of the top line of this page:



I am confident you can find the three Laerd readings for week 1 from there.

Next are a couple of videos reinforcing our "introduction to statistics" theme for this week. As you go through these video materials for this week, be sure to pay particular attention to the following question.

## Question to consider:

- What do you see as the basic need for the field of statistics? In other words, why do statistics exist?

Now let's explore that question with a short video talk that I am asking you to view before our first class meeting.

After watching the video, has your perspective changed? Explain why, or why not.

Now, let's view a second video that addresses the problem side of statistics. This one comes to us from TedEd, and we will take 4 minutes to view this together in class.

Here are six questions that I will also give you in class that I would like you to answer with reference to this video.

1. What is the insight provided by the hospital example?
2. The video relates this example to something called Simpson's Paradox. What is that?
3. In Simpson's paradox, what is a "lurking variable"?
4. How does the public in our time react to this kind of thing?
5. Could a dishonest statistician take advantage of this situation?
6. Given all this, what can scientists do?

## References

Below is a general statistical reading resource that provides background to inform this week's class discussion

- Frost, Jim (2020) [The Importance of Statistics \(Links to an external site.\)](#).