# 西南大学 2022: STATS 201 Assignment 1a

Your Name and ID Number here

Wed 27th April before class at 15:50

## Background

Students in a class were asked to conduct an experiment to determine their average stride length (步幅). That is, the distance traveled with every step.

Each student was instructed to find a flat location where they could walk for 5 to 15 minutes at their natural gait, unimpeded by traffic or other pedestrians. They used a smart device to record the number of steps, and the distance walked (in metres). They were asked to repeat this task about 30 times.

The code below automatically generates the data for a randomly chosen student. The data are in the dataframe **Stride.df**. Variable **steps** is the explanatory variable, and **distance** is the response variable.

## Question of interest

Make inference about the average stride length of the student using a simple linear model.

You need to conduct the analysis using R, complete the Methods and Assumptions Checks, and write the Executive Summary.

## Enter your name here

```
# Replace "Enter your name here" with your name in quotes,
# E.g., myname="Ruoxi Xu"
myname="Enter your name here"
```

## Scatter plot of steps vs distance

```
# Add R code below to draw the scatter plot
```

## Fit a simple linear model and do assumption checks

```
# Add R code below
# NOTE: If any assumptions look questionable, mention this in the Methods and
Assumption Checks,
# but do not do any alterations to the model or data
```

## Inference, i.e, check for significance and calculate confidence intervals

```
# Add R code below
```

## Method and Assumption Checks

The relationship between number of steps and distance walked looks very linear, so a simple linear regression model was fitted.

**[Write a sentence about validity of the model assumptions here]**

The fitted model is $distance_i = \beta_0 + \beta_1 \times steps_i + \epsilon_i$ where $\epsilon_i$ are iid distributed $N(0, \sigma^2)$.

**[Write a sentence about the proportion of variability explained here]**

## Executive Summary

**[Write an Executive Summary here]**