STA 322/522 Design of Surveys and Causal Studies

Project 2 Information

In this project, your team performs a randomized experiment with paper helicopters. This document provides instructions on how to make the helicopter and describes the variables we want to consider in the design.

A good helicopter is one that stays in the air for a long time. Thus, we make the response variable the flight time as measured from the time the helicopter is dropped from some height until the time it hits the floor. Use a height of approximately 6 feet high. Make sure you drop from the same height each time; otherwise, the different heights will make the results hard to interpret.

For the helicopter experiment, we want to investigate the effect of the following four variables on the flight time: rotor length, leg length, leg width and paper clip. We vary the helicopter experiment levels by using longer or shorter leg and rotor lengths, longer or shorter leg widths, and adding or removing a paper clip.

Assembly Instructions

Below and on the next page describe how to make the paper helicopters. You can find videos online that tell you how to make paper helicopters as well.

- Step 1: Cut the paper to a width of 5cm.
- Step 2: Cut the paper the length of paper rotor length plus leg length, and add 2 cm for the body.
- Step 3: Cut dotted lines at Leg A and Leg C. The length of each cut is 5 cm minus leg width divided by 2.
- Step 4: Fold leg A onto leg B.
- Step 5: Fold leg C onto leg B.
- Step 6: Fold rotor A and rotor B in opposite directions. They should form 90° to the body and be 180° away from each other.
- Step 7: For the paper clip version: Add a paper clip to the bottom of the leg

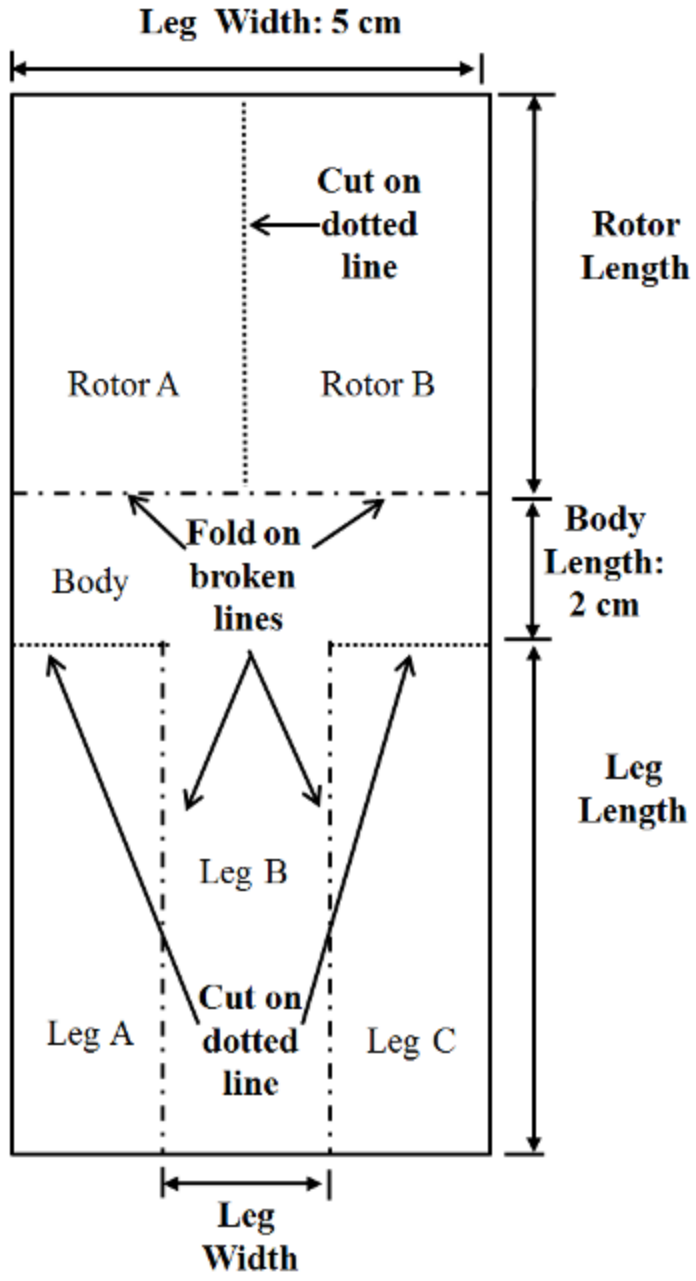

Figure 1: The helicopter plan

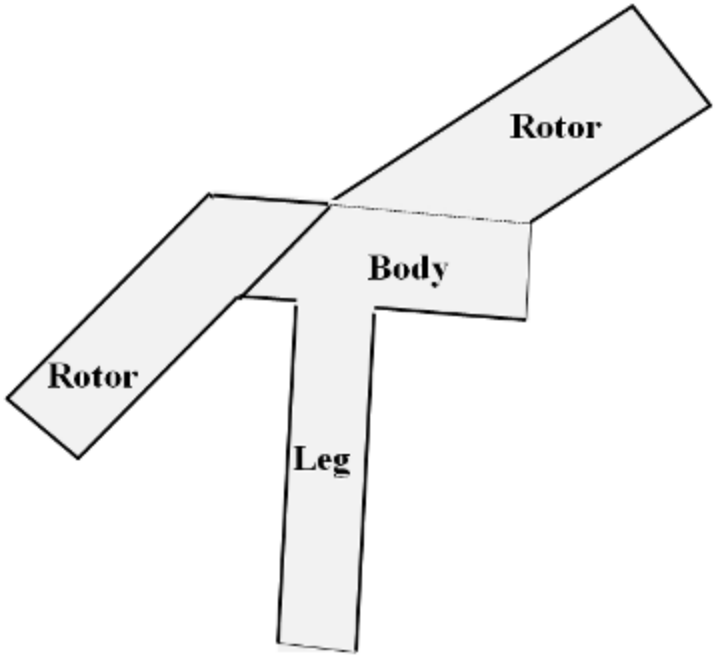

Figure 2: The finished helicopter

Factor	Low setting (-)	High setting (+)
Rotor length	7.5 cm	8.5 cm
Leg length	7.5 cm	12.0 cm
Leg width	3.2 cm	5.0 cm
Paper clip on leg	No	Yes

Table 1: Helicopter factors