YOUR THESIS TITLE IS WRITTEN HERE...

By

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2022

In the Name of Allah The Most Merciful and The Most Beneficent

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Author Name

A THESIS SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PHILOSOPHY IN STATISTICS

Supervised By

Name of supervisor

Department of Statistics

Faculty of Natural Sciences

Quaid-i-Azam University, Islamabad

2022

Declaration

I "Author Name" hereby solemnly declare that this thesis titled, "Your thesis title is written here...".

- This work was done wholly in candidature for a degree of M.Phil Statistics at this University.
- Where I got help from the published work of others, this is always clearly stated.
- Where I have quoted from the work of others, the source is always mentioned. Except of such quotations, this thesis is entirely my own research work.
- Where the thesis is based on work done by myself jointly with my supervisor, I have made clear exactly what was done by others and what I have suggested

Dated:_____ Signature:_____

Dedication

I am feeling great honor and pleasure to dedicate this research work to

My beloved...

Whose endless affection, prayers and wishes have been a great source of comfort for me during my whole education period and my life

Acknowledgments

The acknowledgment is written here...

Abstract

The abstract is written here...

Contents

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Chapter 1

Introduction

Statistics is the grammar of science

– Karl Pearson

The Introduction is written here...

1.1 Section

content...

1.1.1 The sub section

- Item 1
- Item 2
- Item 3

1.2 Research Motivation

1.3 Problem Statement

1.4 Contribution of the Research

Chapter 2

Literature Review

The article Fisher (1936) discusses theory and analysis of design of experiments...

Chapter 3

Your Work Chapter

In this chapter, your work and methodology will be explained.

In Figure 3.1 the RTM effect in diastolic blood pressure is visualized in which the measurement is taken from the same subject in a pre and post-intervention. The subjects were selected whose diastolic blood pressure is greater than 90 mmHg and whose true mean is practically unknown. The variation in measurement is assumed to be due to random error.

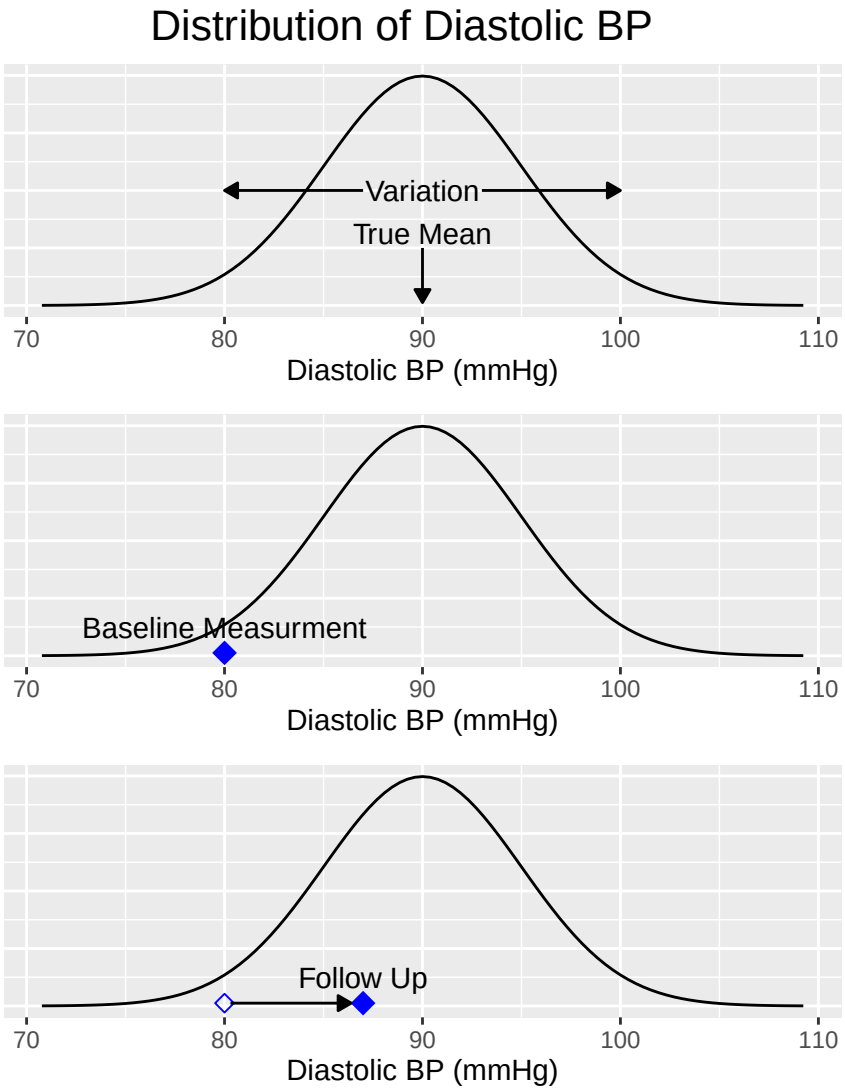

Figure 3.1: RTM effect in diastolic blood pressure in baseline and follow-up measurement with true mean and variation

Equation 3.1 shows the unbiased estimator of population variance σ^2

$$s^2 = \sum_{i=1}^{n} \frac{(x_i - \bar{x})}{n-1} \tag{3.1}$$

Chapter 4

Results and Discussion

The p-value of $P(t_{(17)} > 4.067) = 0.000506$ and provide sufficient evidence that the treatment has a significant effect on increasing the weight of girls after removing the effect of RTM however the test doesn't quantify the amount of RTM. Further, all the methods overestimate the true effect of RTM and the proposed method is more close to the True value when the sample size is small as seen from a simulation study.

Table 4.1: The total $\hat{T}_l(c; n, \theta)$, RTM $\hat{R}_l(c; n, \theta)$ and treatment $\hat{\psi}_l$ effects

	Pre-post Measurement of treatment group (m=17)			
Effects	$\hat{T}_l(c; n, \theta)$	$\hat{R}_l(c; n, \theta)$	$\hat{\psi}_l$	p-value*
Proposed	-7.248	1.476	-5.772	0.00012
Khan and Olivier (2022)	-7.248	1.218	-6.03	0.00016

*Adjusted for RTM

Chapter 5

Conclusion

The summary of your work

Appendices

Appendix A

R Codes

The following R functions return the scatter plot

```r
# This is a comment in R
x <- c(1, 2, 3, 4, 5)
y <- c(6, 7, 8, 9, 10)
plot(x, y, main = "My Plot", xlab = "X Axis", ylab = "Y Axis
    ")
```

Appendix B

Anorexia Patients Dataset

Source: Brian Everitt (private communication)
These are weights, in pounds (lb), of young girls receiving three different treatments for anorexia over a fixed period of time with the control group receiving the standard treatment.

Cognitive behavioral treatment		Control		Family therapy	
Before	After	Before	After	Before	After
80.5	82.2	80.7	80.2	83.8	95.2
84.9	85.6	89.4	80.1	83.3	94.3
81.5	81.4	91.8	86.4	86	91.5
82.6	81.9	74	86.3	82.5	91.9
79.9	76.4	78.1	76.1	86.7	100.3
88.7	103.6	88.3	78.1	79.6	76.7
94.9	98.4	87.3	75.1	76.9	76.8
...	...	...	...	...	...

References

Fisher, R. A. (1936). Design of experiments. *British Medical Journal*, 1(3923):554.

Khan, M. and Olivier, J. (2022). Regression to the mean: Estimation and adjustment under the bivariate normal distribution. *Communications in Statistics-Theory and Methods*, pages 1–19.