

# **The Effects of Visual and Design Features on the Perception of Correlation in Scatterplots**

A thesis submitted to the University of Manchester for the degree of  
Doctor of Philosophy  
in the Faculty of Science and Engineering

2024

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# Abstract

put abstract here

# Lay abstract

This is lay abstract text.

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# Acknowledgements

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# Chapter 1

## Introduction

### 1.1 Research Motivation

### 1.2 Contributions

### 1.3 Included Publications

The research described in chapters 4, 5, 6, and 7 in this thesis is adapted from earlier publications, the last of which under review as of writing. To avoid repetition, information and discussion that would be repeated has been consolidated into the literature review and general methodology chapters. *Gabriel Strain* is the primary author of all included papers.

- *The Effects of Contrast on Correlation Perception in Scatterplots* [**strain\_2023**] is reproduced in Chapter 4. Sections 4.4.2, 4.5.2, 4.4.3, 4.5.3, 4.4.4, 4.5.4, and 4.6 contain minimally altered parts of the published article.
- *Adjusting Point Size to Facilitate More Accurate Correlation Perception in Scatterplots* [**strain\_2024**] is reproduced in Chapter 5. Sections 5.4.2, 5.4.3, 5.4.4, and 5.5 contain minimally altered parts of the published article.
- *Effects of Point Size and Opacity Adjustments in Scatterplots* [**strain\_2024b**] is reproduced in Chapter 6. Sections 6.4.2, 6.4.3, 6.4.4, and 6.5 contain minimally altered parts of the published article.
- *Effects of Alternative Scatterplot Designs on Belief (under review)* is reproduced in Chapter 7. Sections 7.4, 7.5.2, 7.5.3, 7.5.4, and 7.6 contain minimally altered parts of the published article.

### 1.4 Overview of Thesis

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# Chapter 3

## General Methodology

### 3.1 Introduction

In this chapter we describe our research methodologies. Chapters 4, 5, and 6 share most aspects of experimental method, while the experiment described in chapter 7 differs substantially. Throughout this chapter, the reader should assume that we are referring to the entire body of experimental work this thesis describes. Methods that differ regarding the final experiment in chapter 7 are detailed along the way. In this chapter, we discuss our experimental designs, the tools we use to build and run our experiments, our approach to statistical analyses, and the computational methods and practices we employed particularly with regards to reproducibility and open science.

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