# Human Mobility Science: Approaches, Applications and Tools

Francisco Rowe

Carmen Cabrera-Arnau

2025-02-16

#### Table of contents

#### **Preface**

This website is to host the book: **Human Mobility Science: Approaches, Applications and Tools** which is currently in development.

The book aims to provide best practice standard approaches, applications and tools on how to process and engineer location data from mobile phones to measure, analyse and model human mobility patterns.

#### 1 Introduction

# Part I Human Mobility Data

### 2 Forms of Human Mobility Data

# 3 Fundamentals of Human Mobility Data

# 4 Ethics of Human Mobility Data

# Part II Data Pipelines

# 5 Data Processing Models

#### Location Detection

# 7 Spatial Aggregation

# 8 Temporal Aggregation

#### 9 Home Location

#### 10 Work Location

# Part III Data Assurance

# 11 Measuring Biases

# 12 Analysis of Bias

# 13 Data Bias Adjustment Approaches

# 14 Data Quality Assessment

# Part IV Human Mobility Analysis

# 15 Spatial Summary Indicators of Mobility

# 16 A Network Science Approach to Human Mobility

# 17 Modelling Human Mobility