

Does Urbanisation Predict Election Outcomes?

A Bayesian's Perspective

Eldaleona Odole Leonor Cunha Anarghya Murthy

Faculty of Statistics

January 13, 2025

Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation

Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation

Introduction

- **Research Question:** How does urbanization of a particular district affect result of an election in the US?
- **Variable of Interest:** Winning party in the House of Representatives 2022 General Election (binary)

Table of Contents

- 1 Introduction
- 2 Dataset Description**
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation

Dataset

We wanted to consider different factors in the analysis, with our primary focus being the urbanization of each House district. These factors included:

- 1 Demographic Data (US Census Bureau)
- 2 Urbanization (FiveThirtyEight)
- 3 Regional Information (US Census Bureau)
- 4 Election Results (FiveThirtyEight)

We combined different sources in order to create our data set containing 16 unique covariates.

Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup**
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation

Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model**
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation



Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model**
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation



Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model**
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation



Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model**
- 8 Centred vs Non-centred Parameterisation



Table of Contents

- 1 Introduction
- 2 Dataset Description
- 3 Model Setup
- 4 Results - Pooled Model
- 5 Results - Unpooled Model
- 6 Results - Hierarchical Model
- 7 Results - Varying Intercept Model
- 8 Centred vs Non-centred Parameterisation**

STAN Code